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A review of important forest insect and disease problems in the HEARST DISTRICT of Ontario, 1950 - 1980

Compiled by

H. J. Weir, M. J. Thomson,
D. C. Constable and H. Brodersen
Miscellaneous Report No. 45

Canada

87-05593/

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The Great Lakes Forestry Centre is one of six regional centres located across Canada and operated by the Canadian Forestry Service. The Service provides federal leadership and a national focus in the forestry sector for the continuing economic, social and environmental benefit of Canadians. The Centre conducts two major programs: research and technical services, and forestry development. Both programs address major problems affecting forest management and the forested environment in Ontario. Because of the transprovincial nature of the forest resource, many elements of the research program are of national significance.

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The Centre recognizes that forested land must be managed in the best public interest, not only for the wood production essential to our economy but also for the recreational purposes that are so important to our social well-being. These goals must be achieved in a manner that will maintain or improve the quality of the forest environment and preserve it for generations to come.

A REVIEW OF IMPORTANT FOREST INSECT AND DISEASE PROBLEMS IN THE HEARST DISTRICT OF ONTARIO, 1950-1980

Compiled by

H.J. Weir, M.J. Thomson, D.C. Constable and H. Brodersen[1]

GREAT LAKES FORESTRY CENTRE
CANADIAN FORESTRY SERVICE
GOVERNMENT OF CANADA
1986

MISCELLANEOUS REPORT NO. 45

[1] *Forest Research Technicians, Forest Insect and Disease Survey Unit*

©Minister of Supply and Services Canada 1986
Catalogue No. Fo29-8/45E
ISBN 0-662-15055-4
ISSN 0832-7130

Additional copies of this publication
are available at no charge from:

Communications Services
Great Lakes Forestry Centre
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P.O. Box 490
Sault Ste. Marie, Ontario
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FOREWORD

The first forest insect surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of the Algonquin Park and Parry Sound forest districts, while personnel from the Forest Insect Laboratory in Sault Ste. Marie carried out surveys in the area to the north. In 1950 responsibility for reporting insects for all of Ontario fell to the Sault Ste. Marie laboratory. In 1952 the Forest Disease Survey was initiated with headquarters in Maple, Ontario, then was moved to Sault Ste. Marie in 1967. The results of these surveys of insects and diseases are reported in the Annual Report of the Forest Insect and Disease Survey (FIDS) published by Canadian Forestry Service headquarters in Ottawa. In addition, annual district and regional reports, begun in 1948, are prepared by FIDS technicians (Rangers) in Sault Ste. Marie. In 1980 a new provincial report was released in Ontario. The contents of the following review have been abstracted from these reports and compiled in alphabetical order by the scientific names of species in each of the following categories:

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs.

Minor Insects or Diseases

Capable of causing sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Abiotic Damage

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements given in the earliest reports are taken to the second decimal point [i.e., sq. mi. to km^2 = area (sq. mi.) x 2.59 = area km^2]. Infestation maps in this review were copied from the original maps in the FIDS technicians' reports. Abbreviations for the common names of the host tree species, along with the scientific names, are shown in Appendices A and B. To facilitate the location of hosts, deciduous and coniferous species have been separated and listed alphabetically under the common names.

Appendix C is a series of maps for northeastern Ontario grouped alphabetically by insect species or disease pathogen and showing the location of infestations within a region or infestation boundaries that extend beyond regions.

ACKNOWLEDGMENTS

The authors wish to acknowledge Dr. G.M. Howse, Head, Forest Insect and Disease Survey; Miss C.A. Plexman, Chief, Communications Services; and Mr. P. Jakibchuk, Technical Services Officer, for advice and support during the preparation of this review.

We also wish to acknowledge the following authors of the FIDS district and regional reports from which this review was abstracted.

1950-1952	J. Belcher
1953-1956	J. Robinson
1957	F.A. Bricault
1958	F.A. Bricault and J. Hook
1959	D.F. Lynn
1960-1966	G.T. Atkinson
1967	F.F. Foreman
1968-1969	J.A. Baker
1970-1973	H.R. Foster and J. Hook
1974	L.S. MacLeod, J. Hook and F. Livesey
1975-1977	L.S. MacLeod, J. Hook and H.J. Evans
1978-1979	L.S. MacLeod, W.A. Ingram and H.J. Evans
1980	L.S. MacLeod, W.A. Ingram and D.C. Constable

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INTRODUCTION

This report is a review of significant forest insects and diseases that have occurred in the Hearst District between 1950 and 1980, with reference to outbreaks prior to 1950 when available. In the selection of pests for this report, particular attention was paid to the major working groups of host species in the District, namely hardwoods (birch and poplar) and conifers (jack pine, red pine, white pine, balsam fir, spruce and larch). The insects and diseases included are capable of causing, or have caused, tree mortality or a reduction in growth. Also included are abiotic problems that cause tree damage, i.e., salt, frost, wind and snow damage.

SUMMARY

FOREST INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
pages 9-13

This skeletonizer defoliates white birch. Widespread outbreaks usually last 2-3 years and then virtually disappear, as was the case in 1964 and 1965, and from 1969 to 1971. Severe defoliation seldom causes tree mortality but weakened trees are hosts for secondary insects and diseases and may be a predisposing factor in the widespread deterioration of birch. This insect was not reported between 1956 and 1961, between 1974 and 1980, or prior to 1954.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 14-18

No tree mortality has been accorded to this insect, which affects primarily aspen and poplar. Infestations were first recorded as severe in 1971 and continued until 1974. Low populations were recorded intermittently from 1956 to 1977.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 19-43

This insect is considered the most destructive pest of numerous coniferous hosts, including balsam fir, white spruce, black spruce, and larch. Top killing of balsam fir usually occurs after 3 years of severe defoliation, and whole-tree mortality usually occurs after 5 years. High populations were noted in the District from 1947 to 1954, and high tree mortality occurred. Low populations persisted until 1961, then disappeared until 1965. The current infestation was first reported as light in 1966 and has since increased to severe. Tree mortality was first noted in 1975 and became progressively worse over the next 5 years.

Aspen Defoliators, *Enargia decolor* (Wlk.), *Epinotia solandriana* L., *Gonioctena americana* (Schaef.) and *Pseudexentera oregonana* Wlshm. [Major]
pages 44-46

This complex of defoliators caused light defoliation generally throughout the District from 1950 to 1980.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages 47-60

Infestations causing varying degrees of defoliation have been reported periodically since 1940. Severe defoliation occurred in 1941 and 1942, between 1950 and 1954, in 1965, and from 1973 to 1979. Although this insect seldom causes tree mortality of aspen, prolonged defoliation can weaken trees, which are then predisposed to attack by secondary organisms.

Whitespotted Sawyer, *Monochamus scutellatus* (Say) [Major]
pages 61-62

Both larval and adult damage by this insect are perennial problems in skidways and in residual stands bordering cut-over stands of spruce and jack pine. High larval populations were reported in 1975. Severe branch mortality occurred in 1978 and 1979.

Pine Sawflies, *Neodiprion maurus* Roh., *N. nanulus nanulus* Schedl., *N. pratti banksianae* Roh., and *N. virginianus* complex [Major]
pages 63-64

Low populations of these species of sawflies have persisted in the District since 1953.

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck) [Minor]
page 64

This insect causes twig mortality in jack pine trees. Varying degrees of infestation have been reported periodically since 1955.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) [Major]
page 65

Severe mining of aspen was first recorded in 1951, with varying degrees of infestation persisting until 1980.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) [Major]
page 66

This destructive insect is considered a serious pest of young spruce plantations and open-growing ornamentals. Mortality of young trees can occur following a few years of severe defoliation. Severe defoliation occurred in 1952, from 1954 to 1956, from 1959 to 1961, in 1965 and 1966, in 1970 and 1971, and from 1975 to 1978.

White Pine Weevil, *Pissodes strobi* (Peck) [Major]
page 67

This weevil is a destructive pest of spruce and pine. By attacking the leaders of small trees it causes "cabbaging" of the host trees after several years of infestation. High populations were recorded in 1957, 1958, 1965, and 1966. Low populations occurred from 1976 to 1980.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages 68-69

Severe defoliation causes a loss of increment after 4 or 5 years and tree mortality usually occurs after 6-9 years. Severe defoliation was reported from 1952 to 1955, from 1958 to 1960, in 1967, and from 1978 to 1980. Varying degrees of defoliation have persisted in the district since 1950. Mortality of larch trees was observed from 1962 to 1964.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) [Major]
pages 69-70

Although mountain-ash trees are not considered merchantable, a great number are utilized as shade trees and ornamentals in rural and urban areas. This insect can weaken trees when prolonged severe defoliation occurs and subsequent borer infestations can cause tree mortality. The insect was not reported prior to 1962. Severe defoliation of trees in urban areas was recorded between 1974 and 1980.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow) [Major]
pages 70-71

Although this insect has not been recorded as causing tree mortality, weakened trees are susceptible to secondary insects and diseases; hence, the birch leafminer may be a predisposing factor in "birch decline". Severe browning of foliage occurred in 1961 and from 1965 to 1970. Yearly fluctuations in populations have occurred since 1956.

Other Noteworthy Insects [Major and Minor]
pages 71-79

These are insects with the potential for causing damage to stands, regeneration, and plantations.

FOREST DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl : Fr.) Kummer [Major]
page 83

This root rot is capable of killing both weakened and healthy trees and is a particularly serious pest in spruce and pine plantations that have been planted around old stumps. Light damage has been recorded periodically since 1962.

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard [Major]
page 84-85

Although surveys had been carried out for this destructive pest of young pine, the pathogen was not confirmed by culturing from this District until 1967. Since that time, infected trees have been found in varying degrees of intensity in four townships.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and *C. ledicola* (Peck) Lagerh. [Major]
page 86

Severe infections of spruce foliage can cause a loss of increment in trees when prolonged infection occurs. Varying degrees of infection have occurred since 1954.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver [Major]
page 87

Although ink spot of aspen is not an extremely damaging disease, loss of increment during severe infections is damaging to aspen stands. Severe browning was evident in 1959, 1970, 1978, and 1979. Infection levels have fluctuated since 1959.

Shoot Blight, *Venturia macularis* (Fr.) Müller & v. Arx [Major]
page 88

This is a disease that kills the leading shoots of aspen regeneration and can cause a major reduction in stocking when the incidence of infection is high. The only years in which the incidence was high were 1962, 1963, and 1967.

Other Noteworthy Diseases
pages 88-90

[Major and Minor]

These are diseases with the potential for causing damage to stands, regeneration and plantations.

ABIOTIC DAMAGE

page 93

This condition is caused by a variety of influences, e.g., frost, wind, snow, and hail.

INSECTS

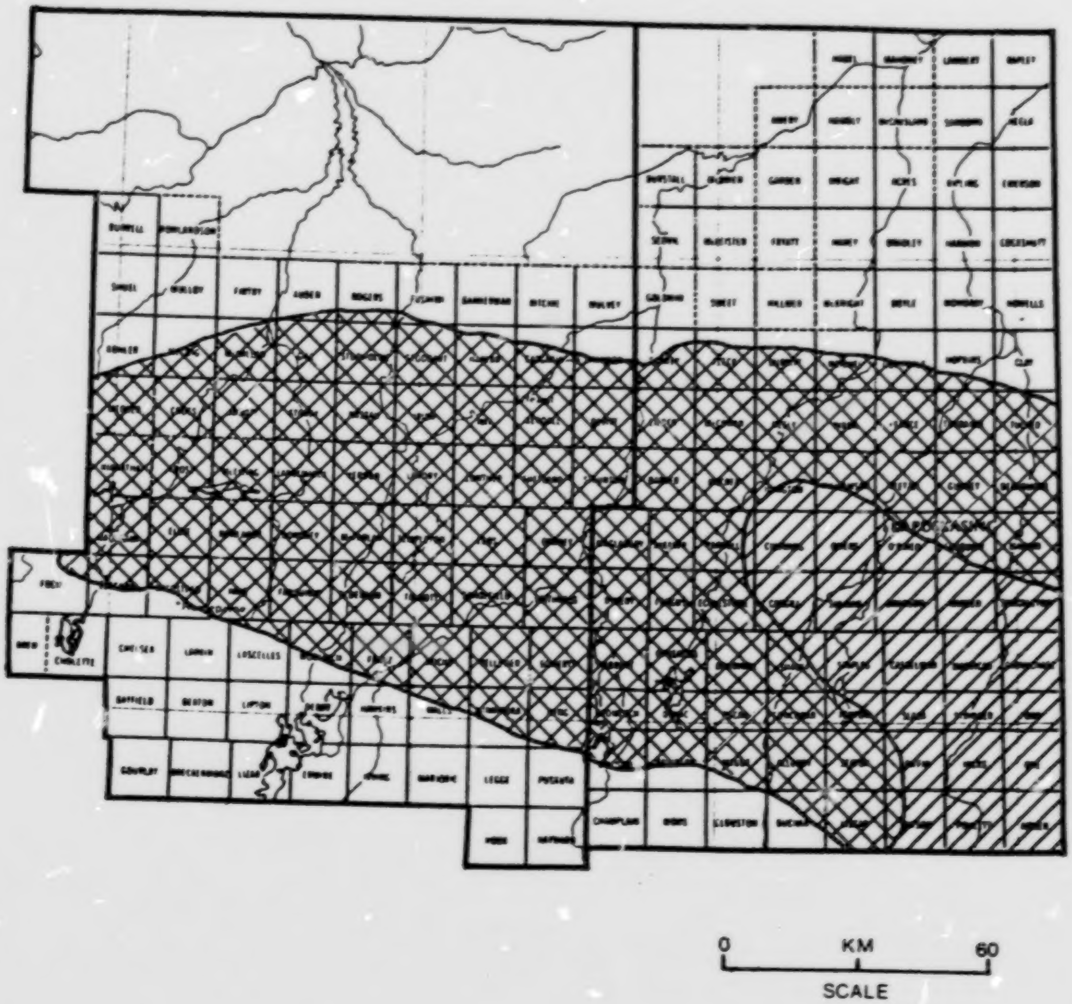
Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): wB

[Major]

Year	Remarks
1950-1953	not reported
1954	severe defoliation in the southern part of the District
1955	a decline to low populations
1956-1961	not reported
1962	light defoliation in Fintry Twp
1963	light defoliation in Casgrain and Byng twps
1964	Severe defoliation occurred in a band of about 88 km across the central part of the District (see map, page 10).
1965	a decline in area infested; severe defoliation in Wicksteed Twp; low populations general
1966	Infestations declined.
1967	very low populations
1968	a light infestation in Studholme Twp
1969	Populations increased to high in Rogers Twp and were low in McMillan, Stoddart and Wicksteed twps.
1970	severe defoliation over 1250 km along the western District border from Rogers Twp on the north to Landry Twp on the south, and from this border to Stoddart Twp on the east
1971	Severe defoliation occurred over 75% of the District (see map, page 11).
1972	A decline in populations occurred, with only light defoliation observed in the western part of the District (see map, page 12).
1973	A further decline occurred in the District (see map, page 13).
1974-1980	not reported

HEARST AND KAPUSKASING DISTRICTS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BIRCH SKELETONIZER

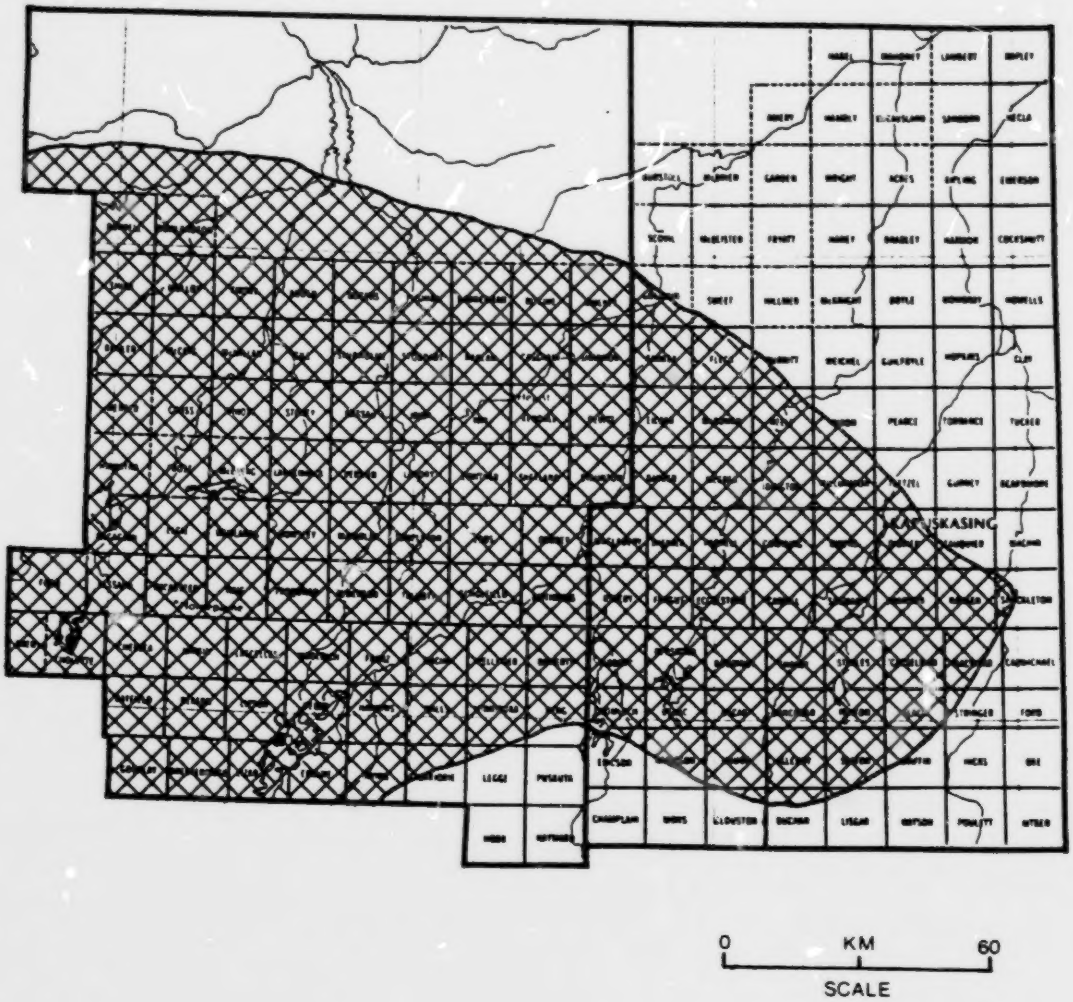
Areas within which defoliation occurred in 1964

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ▩

HEARST AND KAPUSKASING DISTRICTS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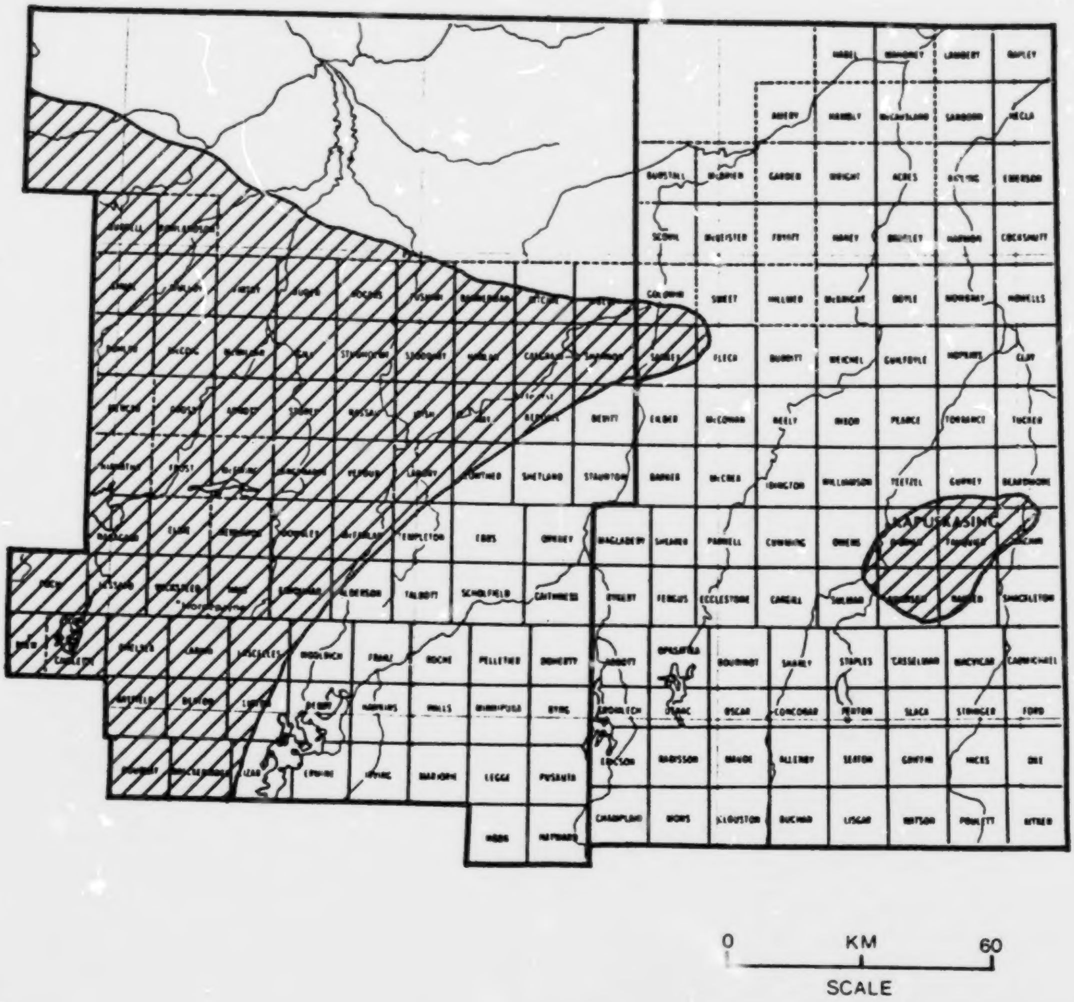
BIRCH SKELETONIZER

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS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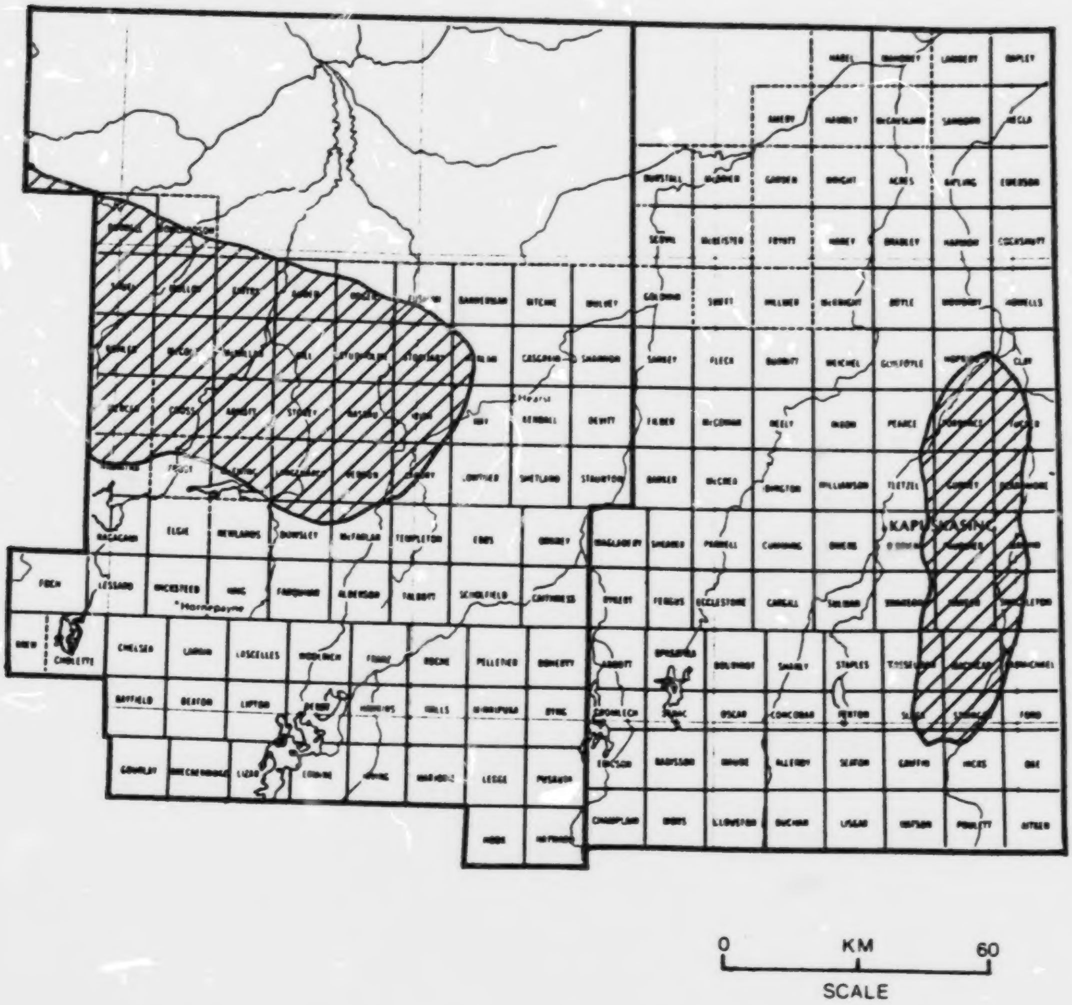
BIRCH SKELETONIZER

Areas within which defoliation occurred in 1972

LEGEND

Light defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


Hearst
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SCALE

BIRCH SKELETONIZER

Areas within which defoliation occurred in 1973

LEGEND

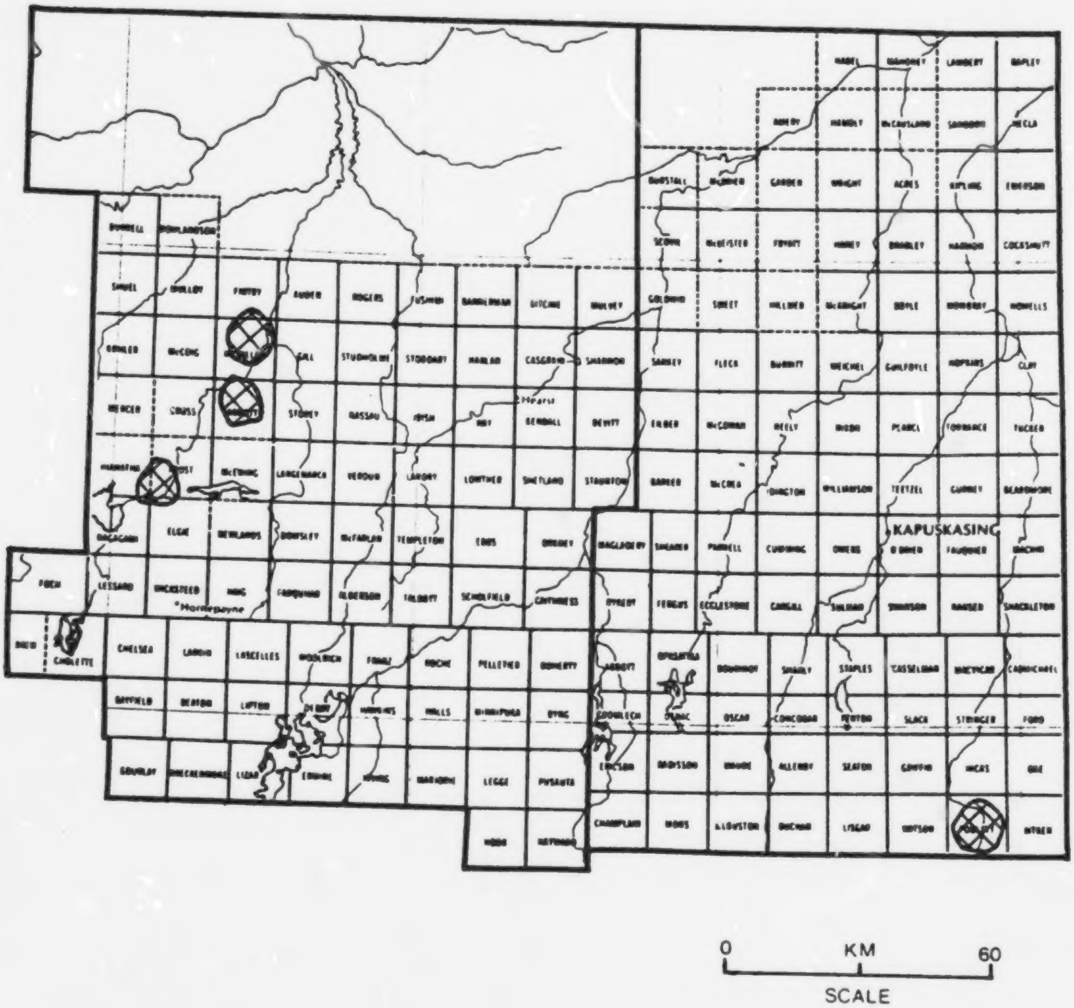
Light defoliation ▨

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Host(s): aspen [Major]

Year	Remarks
1950-1955	not reported
1956	trace populations
1957-1966	low populations in Stoddart Twp
1967-1970	not reported
1971	pockets of severe defoliation at five locations in the western part of the District (see map, page 14)
1972	moderate-to-severe defoliation over 75% of the District (see map, page 16)
1973	decline in area of infestation; five pockets of severe defoliation in the southern half of the District (see map, page 17)
1974	one small pocket of severe defoliation just east of Hearst (see map, page 18)
1975	not reported
1976-1977	very low populations
1978-1980	not reported

HEARST AND KAPUSKASING DISTRICTS


Hearst
KAPUSKASING
Hornepayne
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SCALE

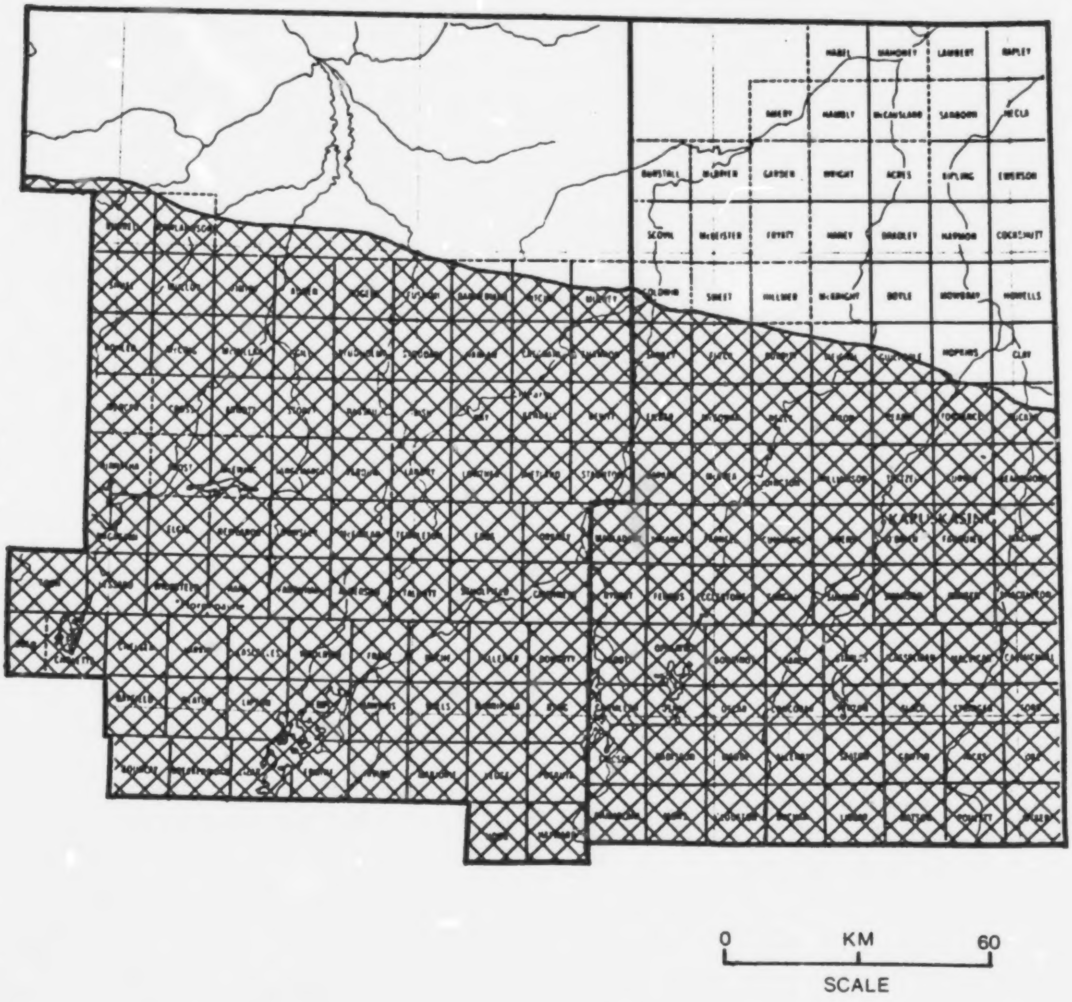
LARGE ASPEN TORTRIX

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS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BURSTALL
McBRIEN
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ACRES
KIPLING
EMERSON
SCOVIL
FRYATT
BRADLEY
HARMON
COCKSHUTT
SWEET
BOYLE
HOWELLS
HOPKINS
CLAY
KAPUSKASING
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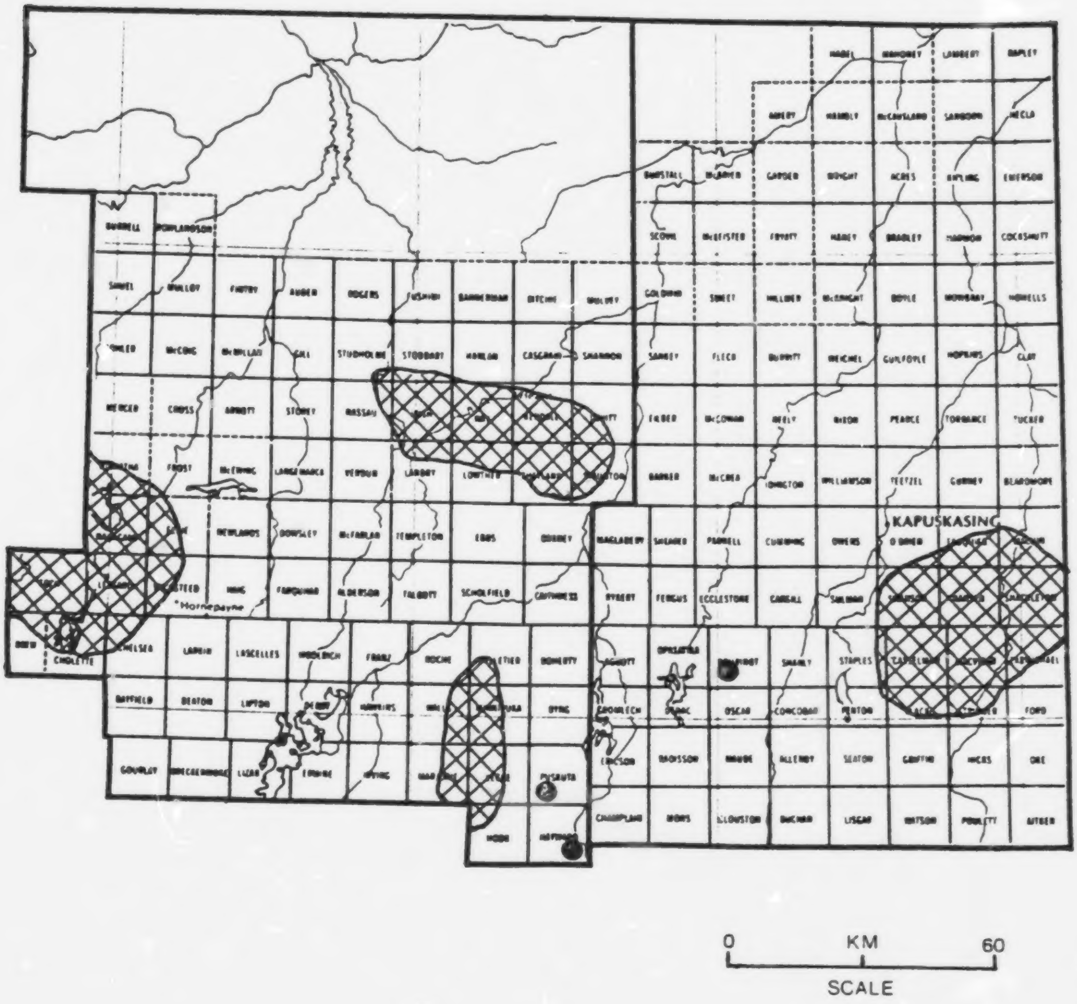
LARGE ASPEN TORTRIX

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS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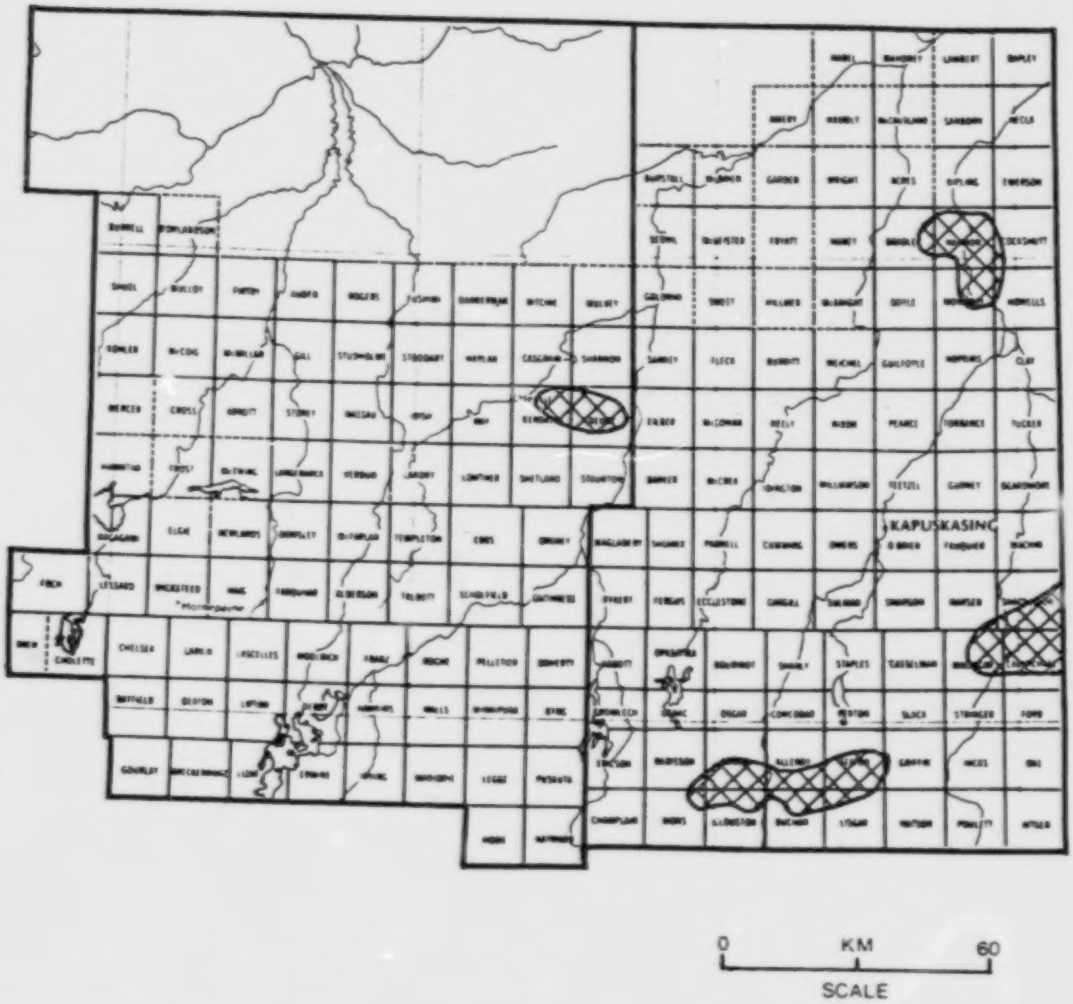
LARGE ASPEN TORTRIX

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

HEARST AND KAPUSKASING DISTRICTS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LARGE ASPEN TORTRIX

Areas with which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ▨

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host (s): wS, bF, bS, tL

[Major]

Year	Remarks
1950	decline in populations; moderate-to-severe defoliation in Gill, Studholme, Stoddart, McMillan and Orkney twps (see map, page 21); balsam tree mortality in Studholme and Stoddart twps and in the southwestern part of the District, centered around Wicksteed Twp (see map, page 22)
1951	a further decline; moderate-to-severe defoliation in Rogers, Gill, Studholme and Stoddart twps (see map, page 23); little change in tree mortality
1952	High populations persisted in Rogers, Studholme, and Stoddart twps, and a new pocket of severe defoliation was observed in Fintry Twp. Two pockets of light infestation occurred south of these locations (see map, page 24); there was a slight increase in mortality in Rogers Twp.
1953	continued high populations with an increase in Fintry, Auden and Rogers twps and an extension north approximately 48 km over an area of 877 km^2 (see map, page 25); continued high mortality in Rogers Twp
1954	High populations occurred in Rogers Twp and to the north (see map, page 26). Mortality increased in Rogers Twp.
1955	very low populations in Rogers and Stoddart twps
1956	low populations in Rogers and Stoddart twps
1957	almost a complete collapse of infestations
1958-1961	very few larvae collected
1962-1965	not reported
1966	a few larvae collected in Gill and Eilber twps
1967	light defoliation in Gill Twp; low populations in Eilber Twp
1968	light defoliation in Hook, Hayward, and Arnott twps

(cont'd)

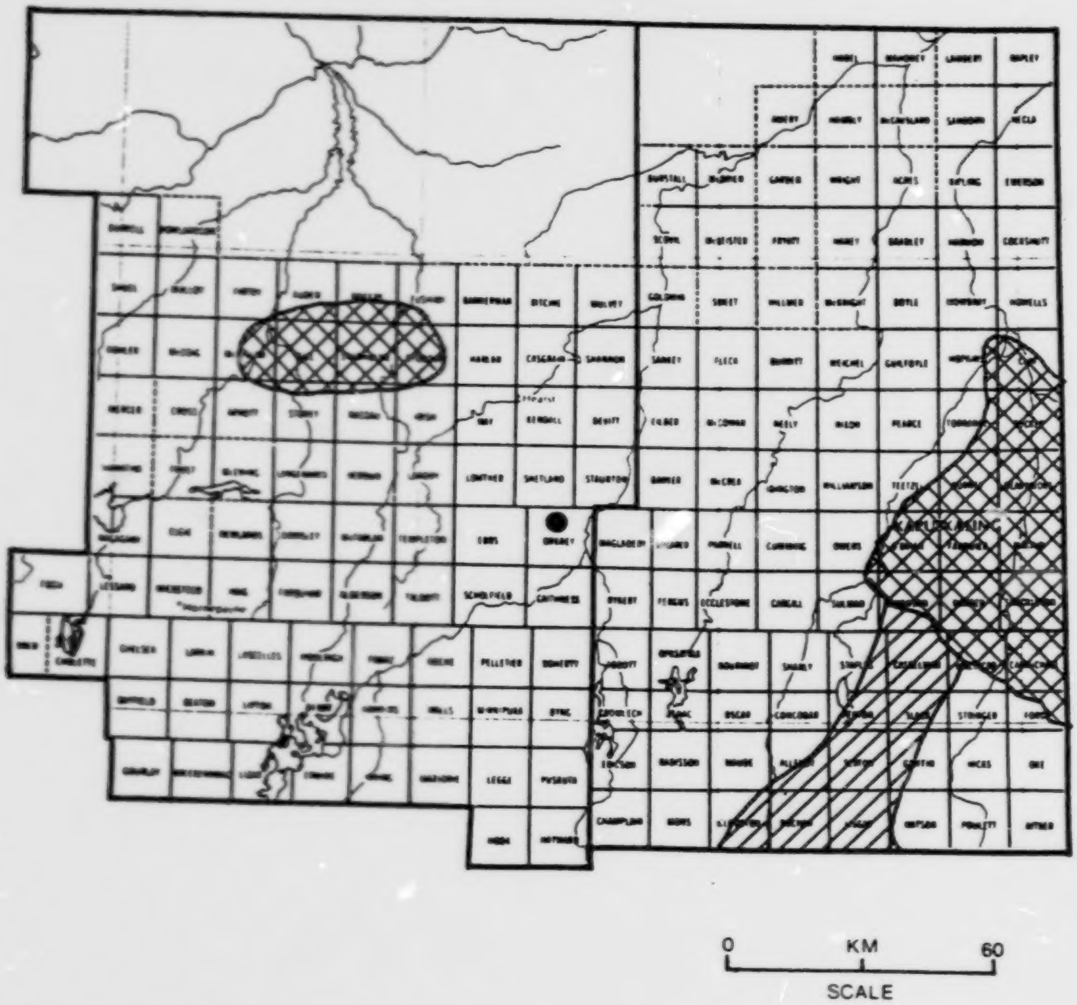
Spruce Budworm, *Choristoneura fumiferana* (Clem.) (concl.)

Host (s): wS, bF, bS, tL

[Major]

Year	Remarks
1969	moderate-to-severe defoliation in Hook and Hayward twps in the southern part of the District
1970	Severe defoliation persisted in Hook and Hayward twps (see map, page 27).
1971	A northern spread in infestation occurred in Legge and Byng twps (see map, page 28).
1972	severe defoliation of balsam fir in six twps in the southeastern part of the District (see map, page 29)
1973	small pockets of severe defoliation in Hook and Hayward twps (see map, page 30)
1974	a northern and western spread of infestation; small areas of mortality in Hook and Hayward twps (see map, page 31)
1975	a further northern and western expansion of infestation (see map, page 32); balsam fir tree mortality in Hook and Hayward twps (see map, page 33)
1976	an extensive expansion of defoliation on the western and northern boundaries of the District (see map, page 34); increased tree mortality (see map, page 35)
1977	severe defoliation over 60% of the District (see map, page 36); increased tree mortality (see map, page 37)
1978	Approximately 75% of the District had severe defoliation of balsam fir and spruce trees (see map, page 38); there was little change in tree mortality (see map, page 39)
1979	Severe infestations covered most of the susceptible stands in the District (see map, page 40). Tree mortality increased (see map, page 41). Aerial spraying with a single application of Orthene was carried out in high-value stands in Studholme and Arnott twps.
1980	little change in infestation intensities (see map, page 42); increases in tree mortality in numerous areas (see map, page 43). 505 ha of valuable trees sprayed with Orthene

HEARST AND KAPUSKASING DISTRICTS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SPRUCE BUDWORM

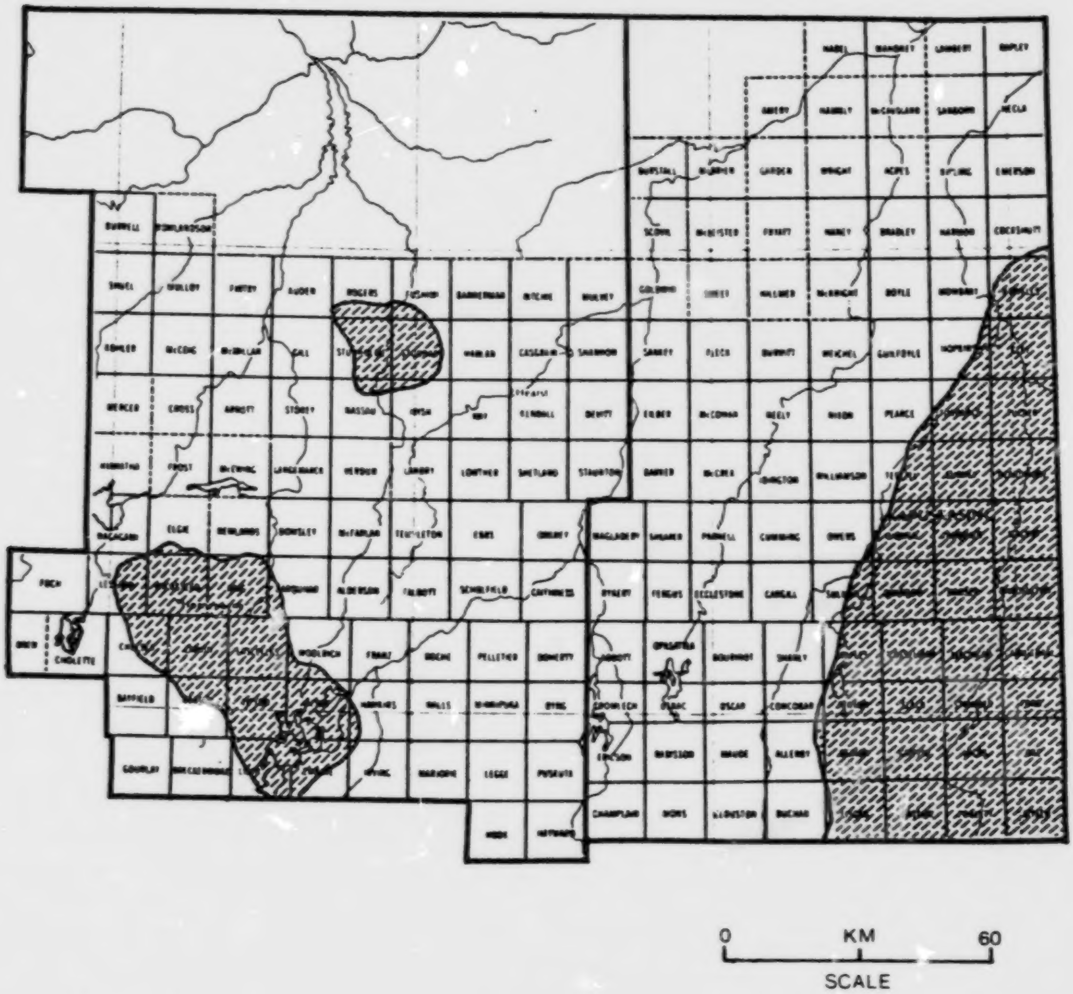
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ▦ or

HEARST AND KAPUSKASING DISTRICTS



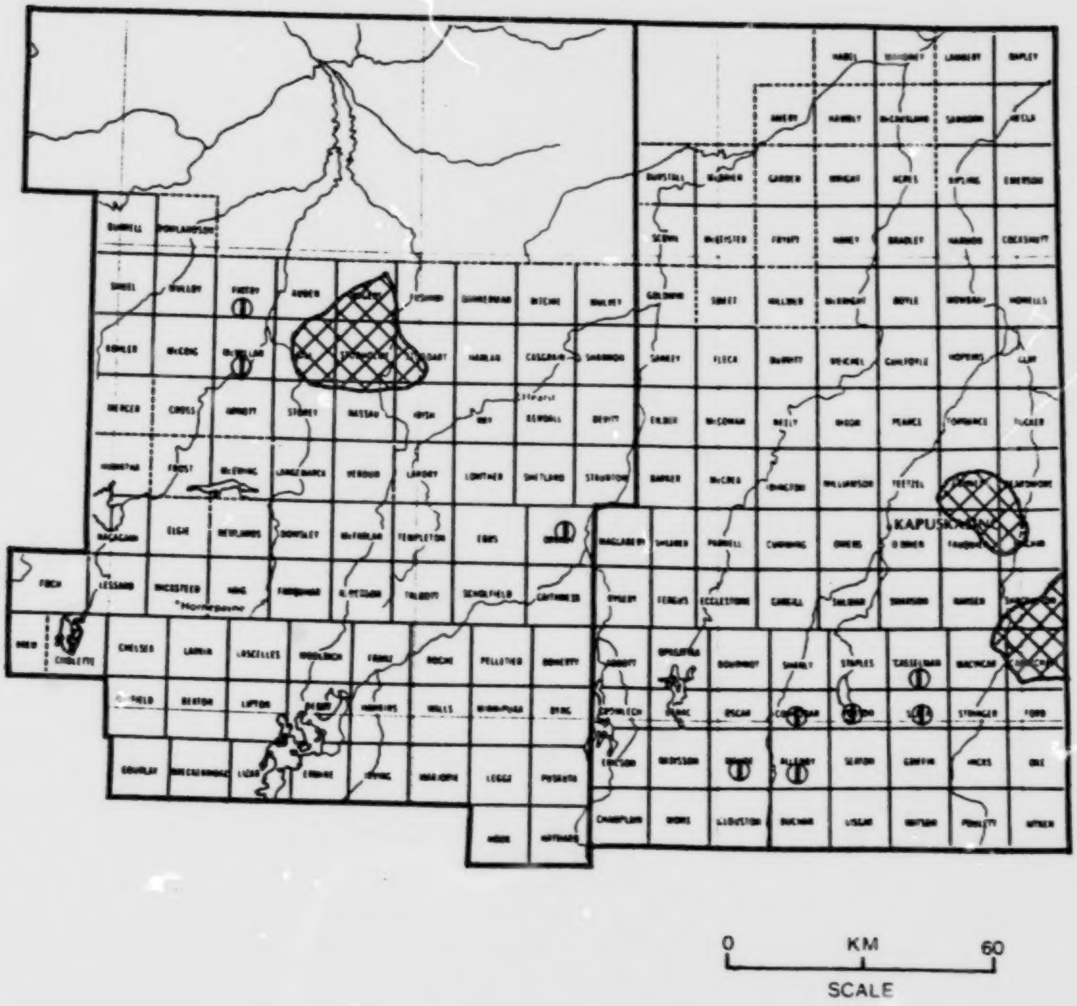
SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1950

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS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SPRUCE BUDWORM

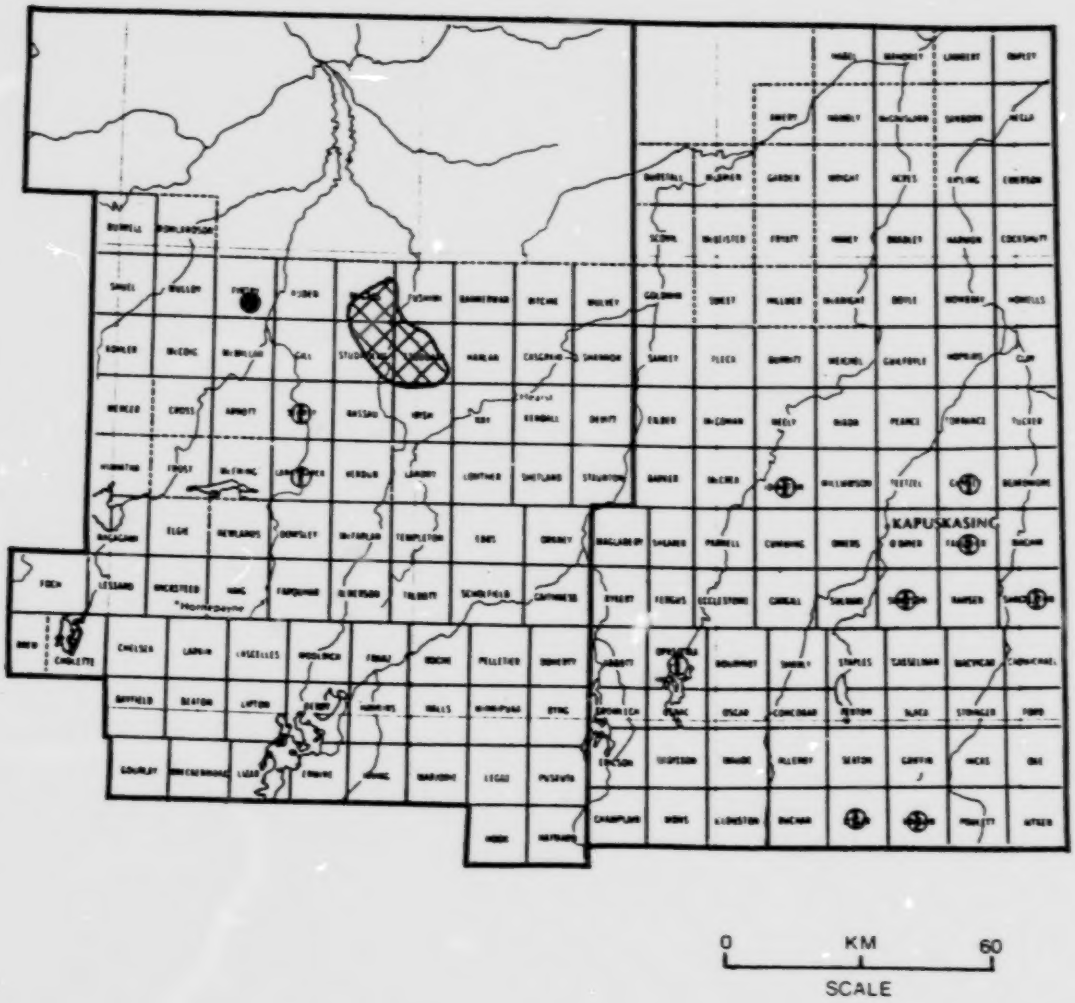
Areas within which defoliation occurred in 1951

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ▩

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
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SCALE

SPRUCE BUDWORM

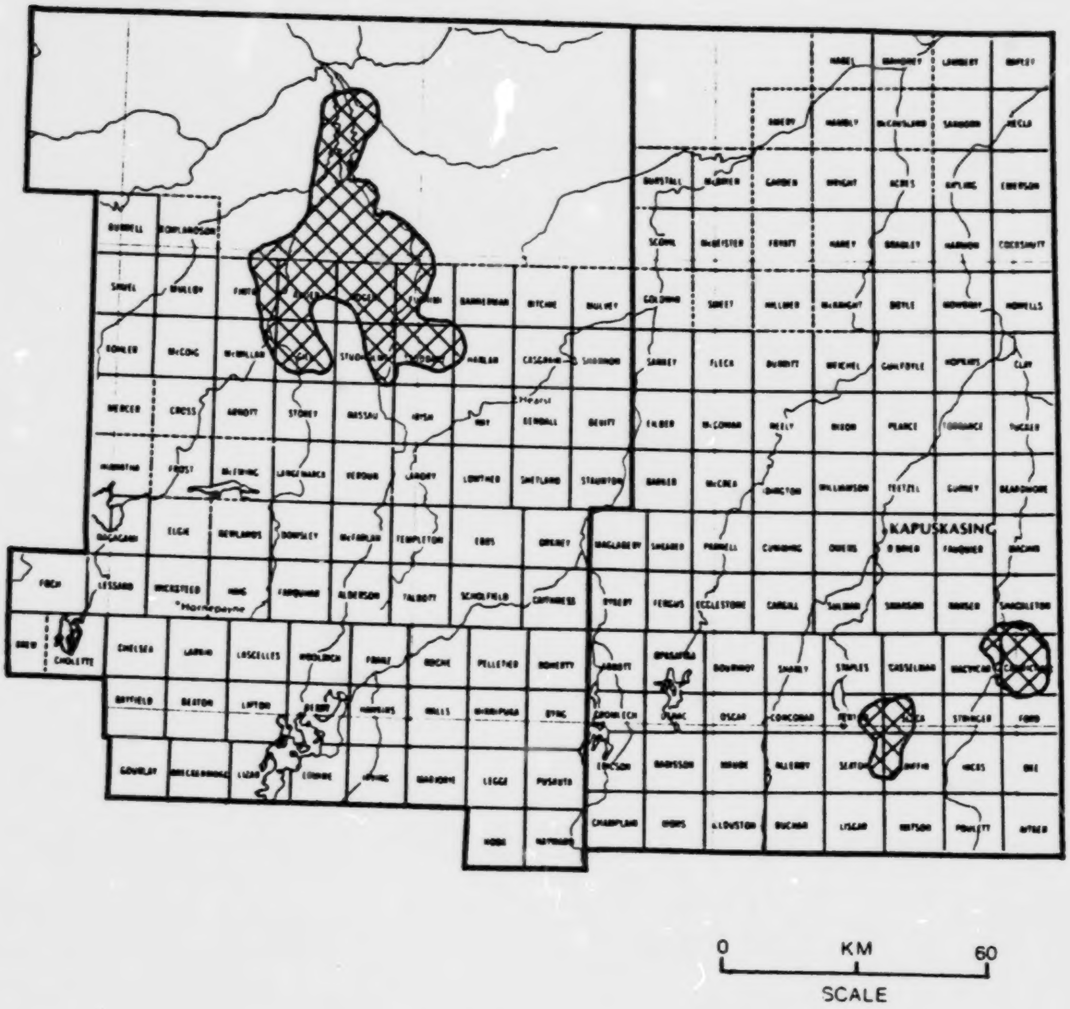
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ● or ▨

HEARST AND KAPUSKASING DISTRICTS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DEVITT
LOWTHER
SHETLAND
STAUNTON
TEMPLETON
EBBS
ALBERSON
TALBOTT
SCHOLFIELD
PELLETIER
DOHERTY
LEGGE
ABBOTT
OSCAR
CONCOBAR
STAPLES
CASSELMAN
STRINGER
FORD
HICKS
CHAMPLAIN
FERGUS
CARGILL
O'BRIEN
FAUQUIER
SHACKLETON
TEETZEL
GURNEY
BEARDMORE
WILLIAMSON
McCREA
FLECK
PEARCE
TORRANCE
TUCKER
DOYLE
HOWELLS
BRADLEY
HARMON
COCKSHUTT
KIPLING
EMERSON
GARDEN
WRIGHT
ACRES
HANLAN
0
KM
60
SCALE

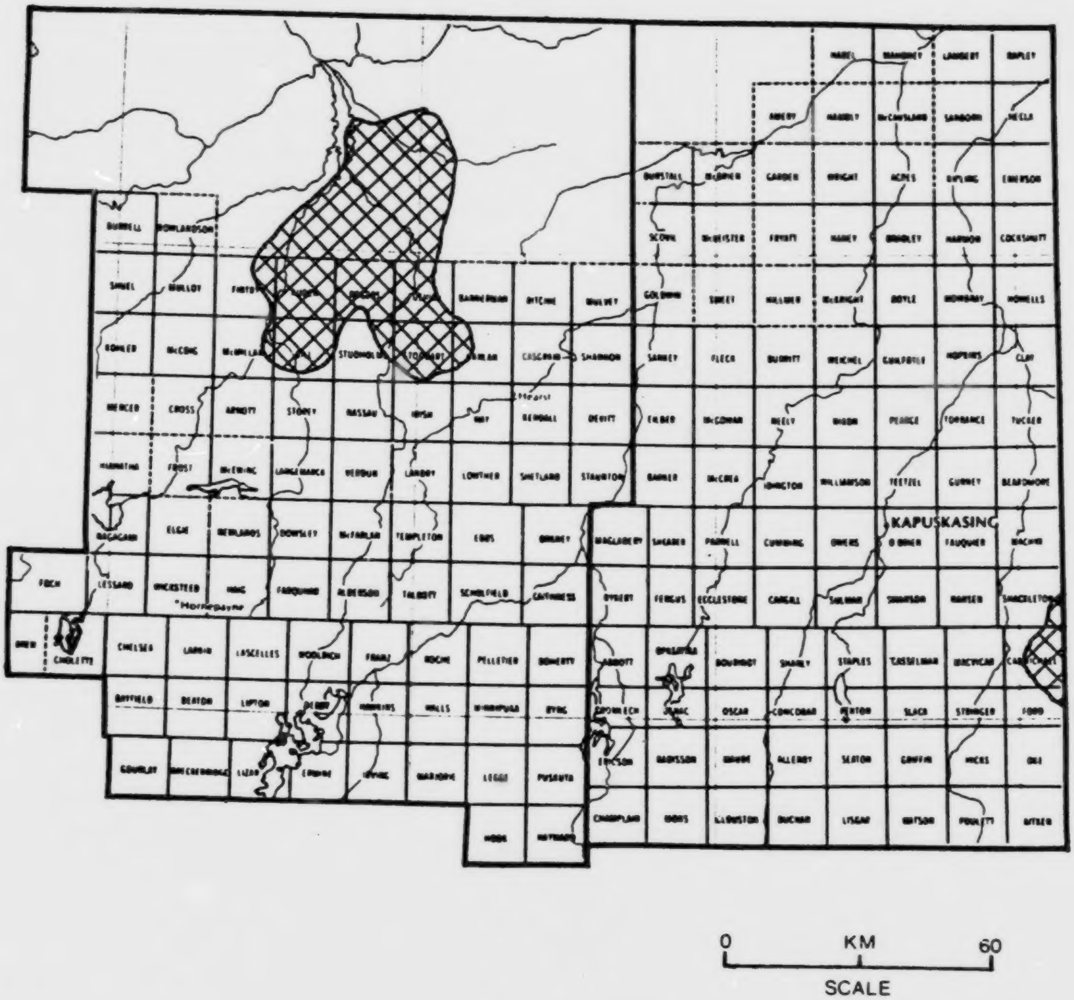
SPRUCE BUDWORM

Areas within which defoliation occurred in 1953

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
0
KM
60
SCALE

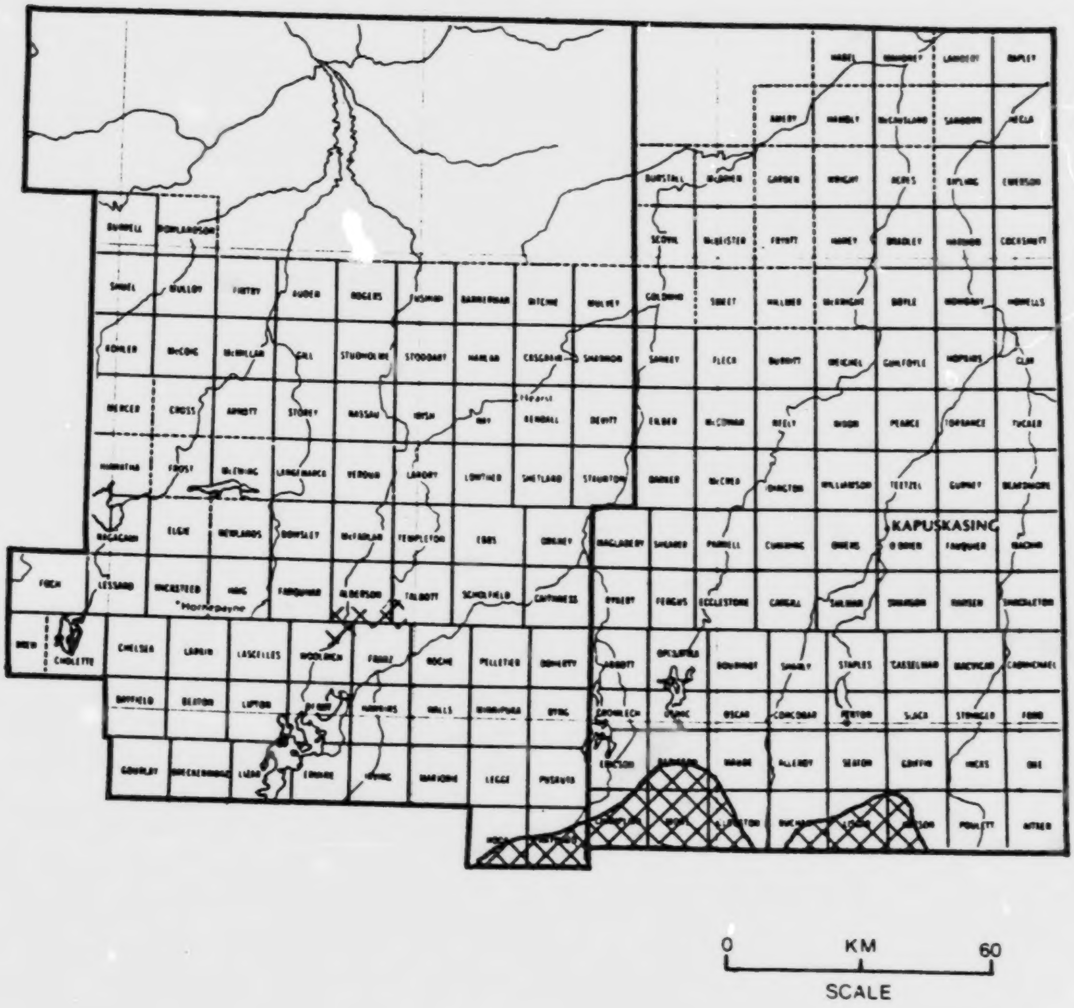
SPRUCE BUDWORM

Areas within which defoliation occurred in 1954

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

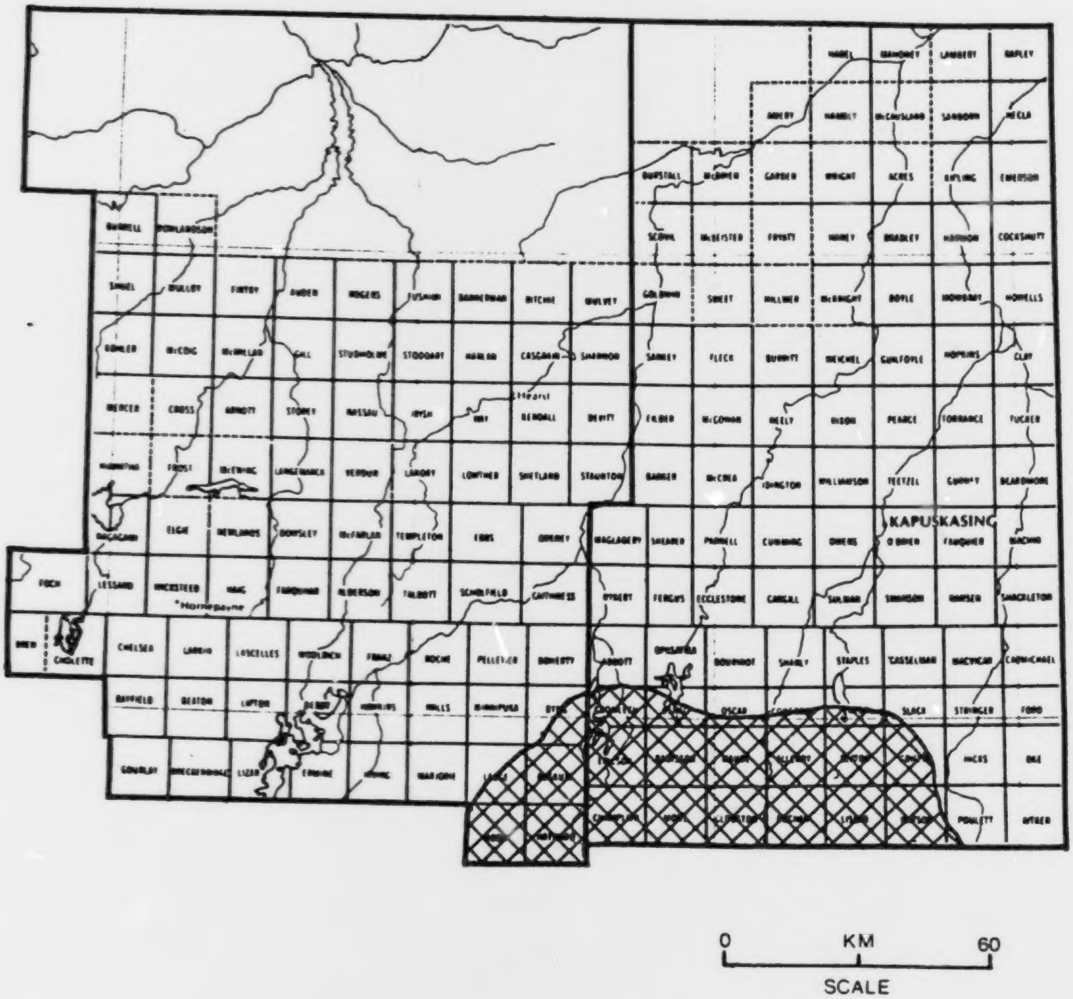
SPRUCE BUDWORM

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

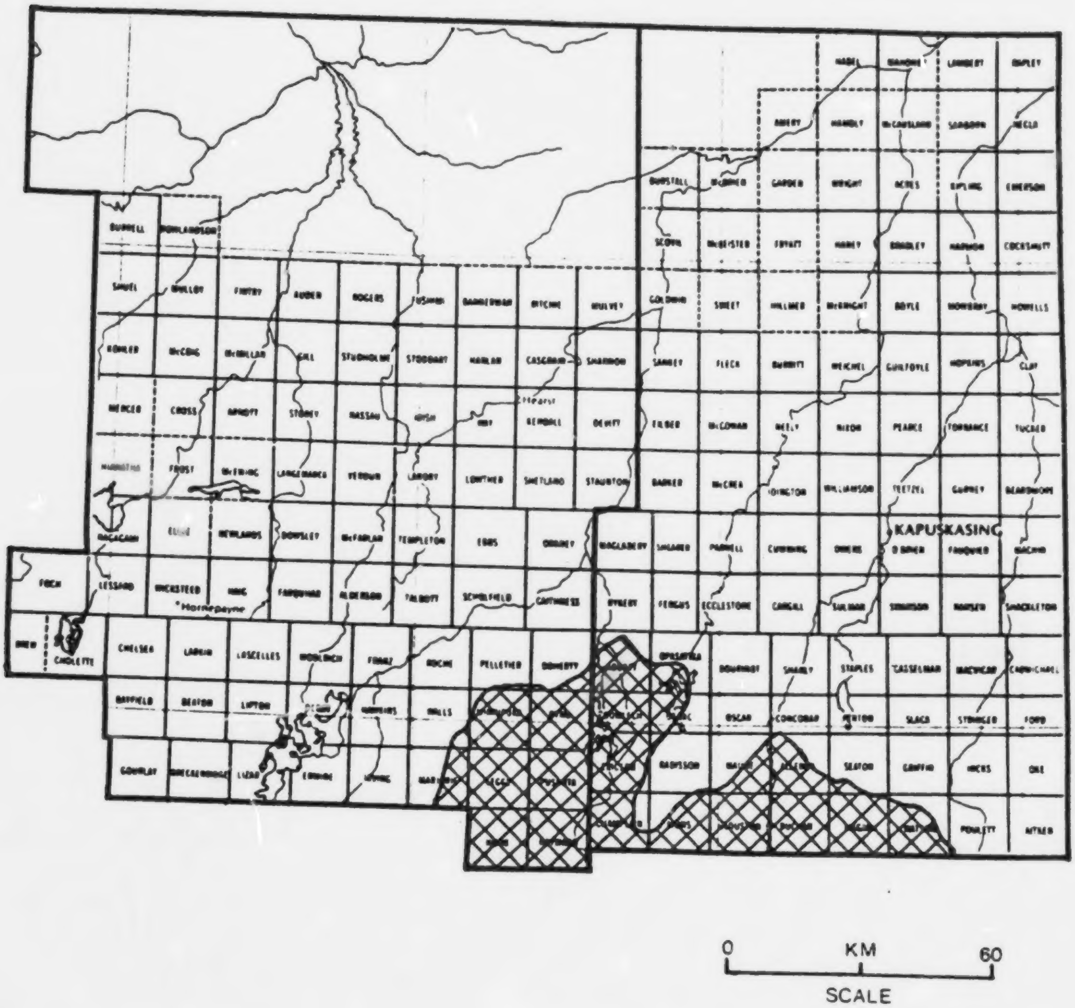
SPRUCE BUDWORM

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


Hearst
Hornepayne
KAPUSKASING
0
KM
60
SCALE

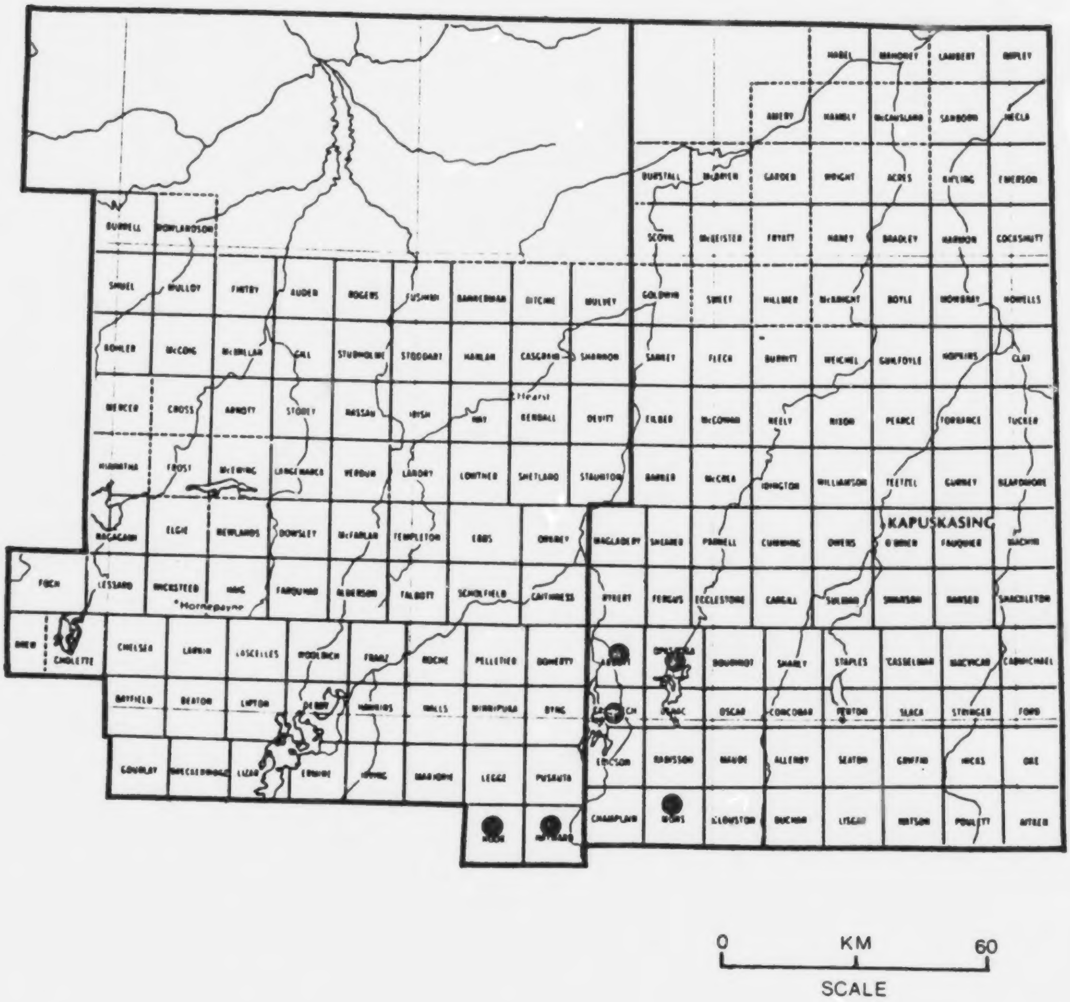
SPRUCE BUDWORM

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

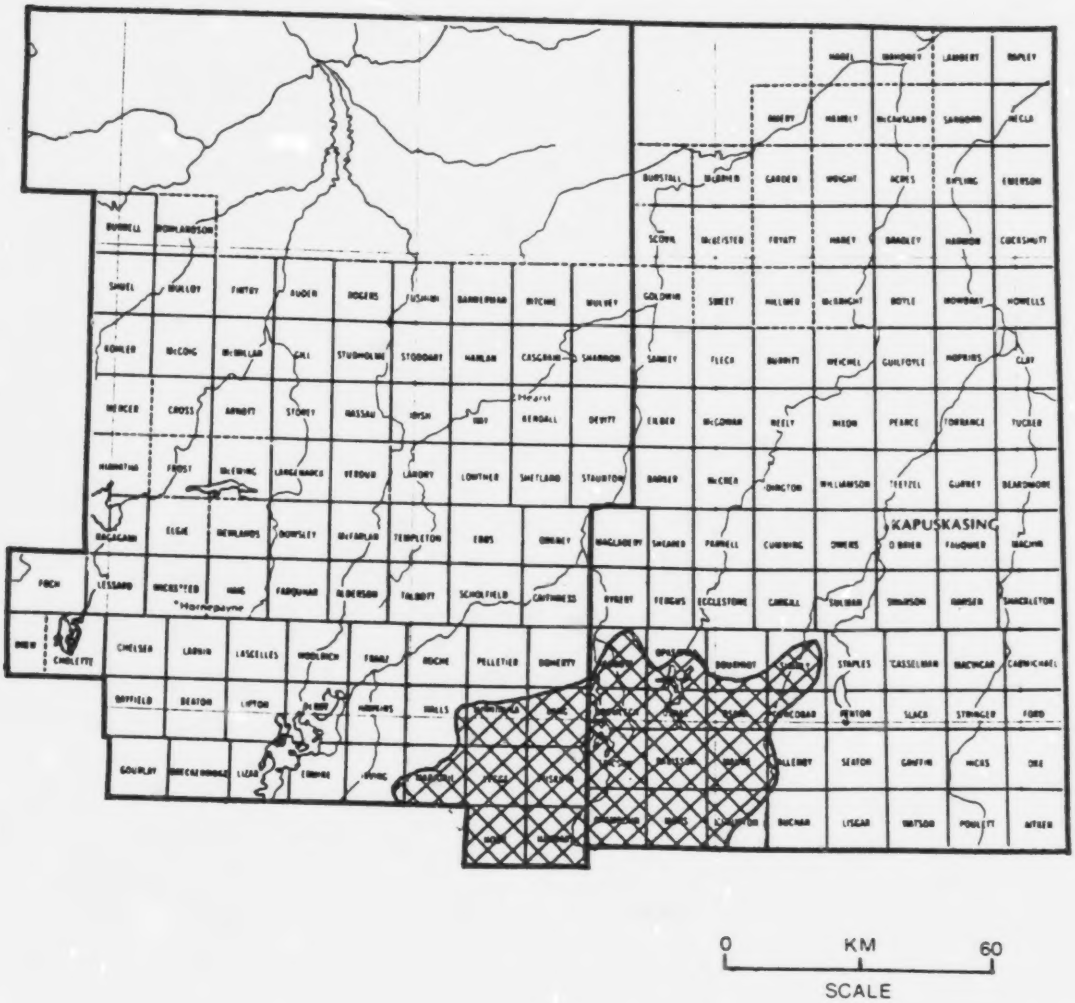
SPRUCE BUDWORM

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


Hearst
KAPUSKASING
Hornepayne
0
KM
60
SCALE

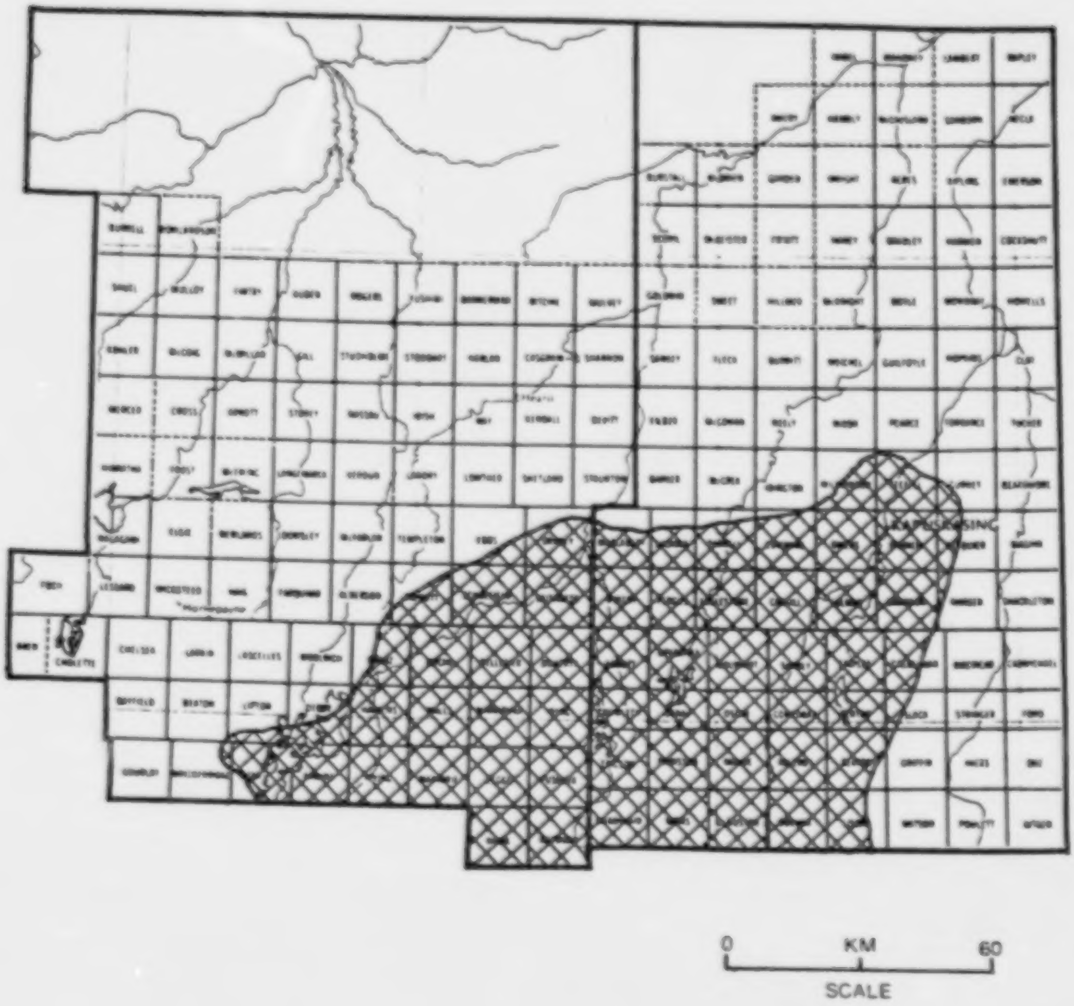
SPRUCE BUDWORM

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

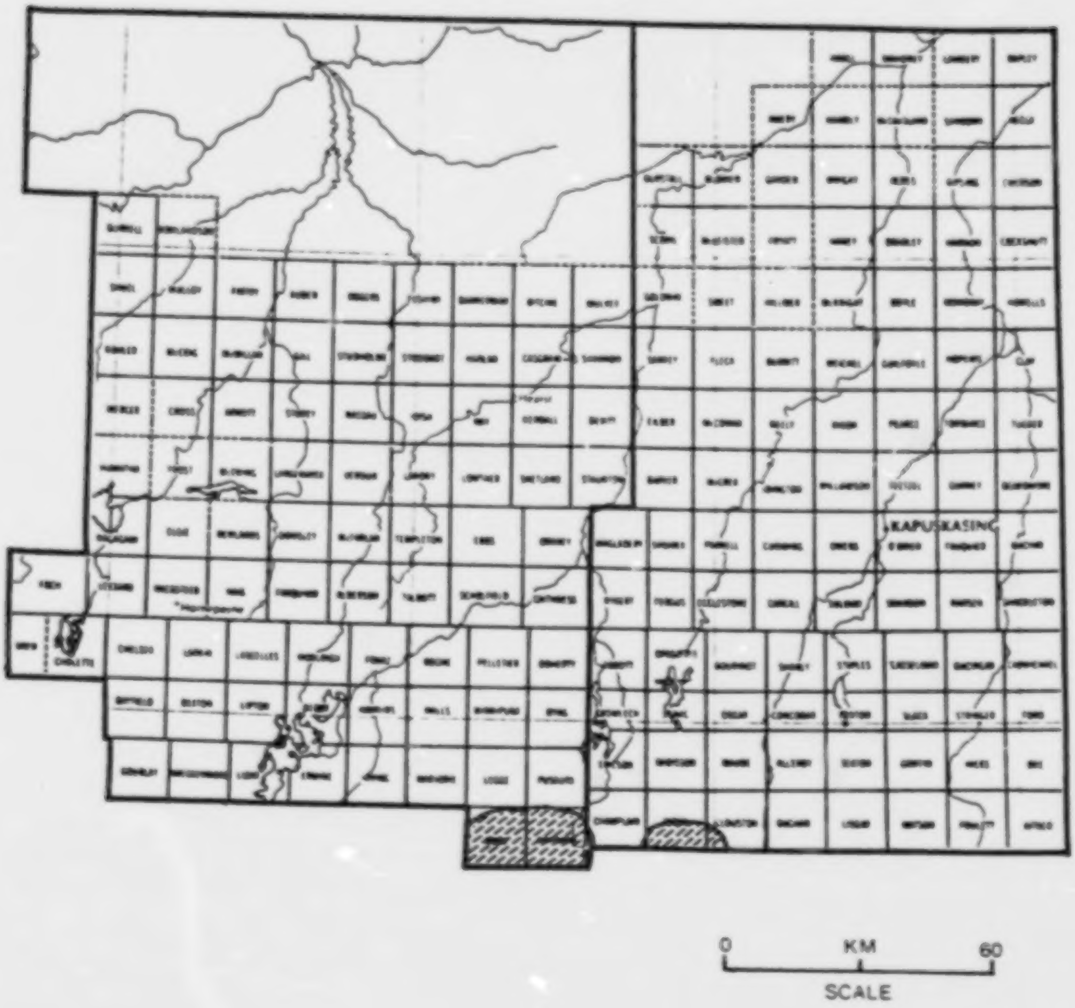
SPRUCE BUDWORM

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

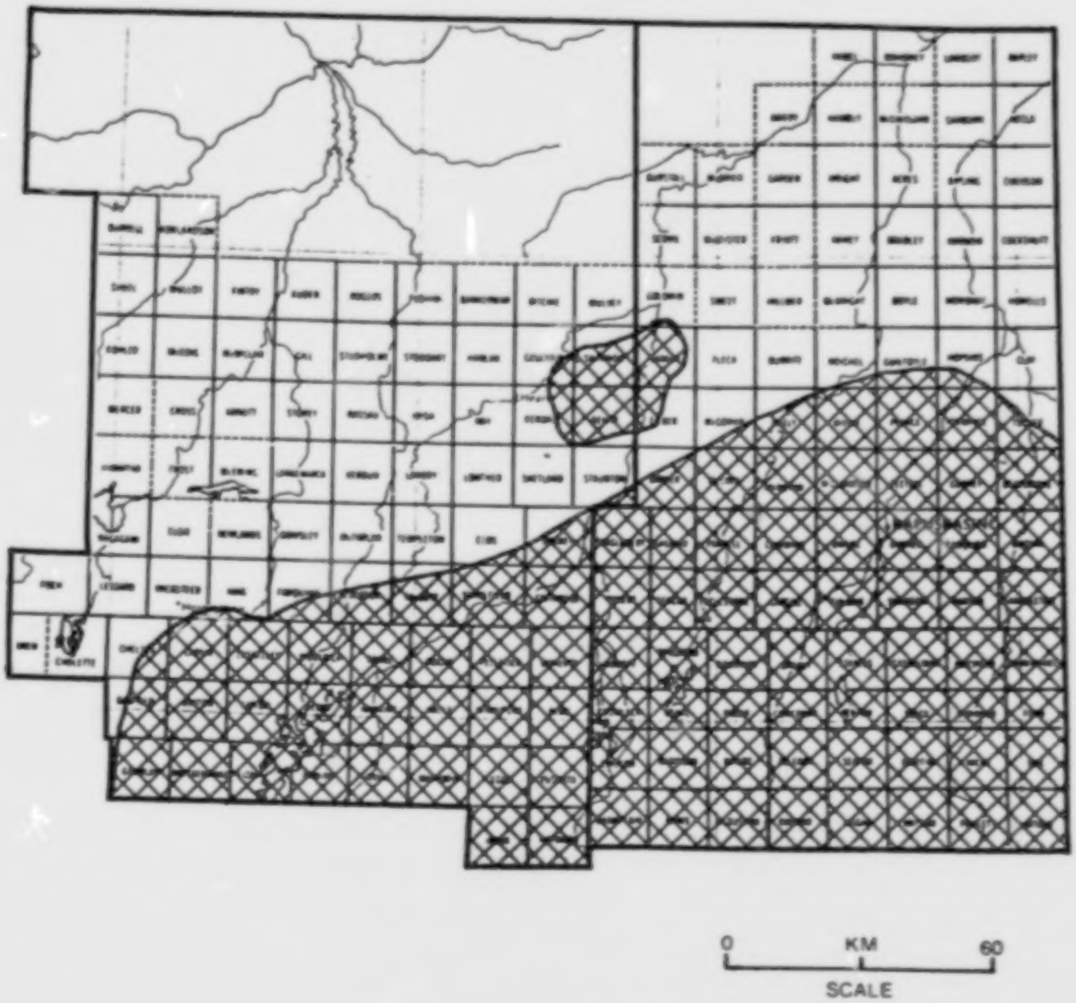
SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1975

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS



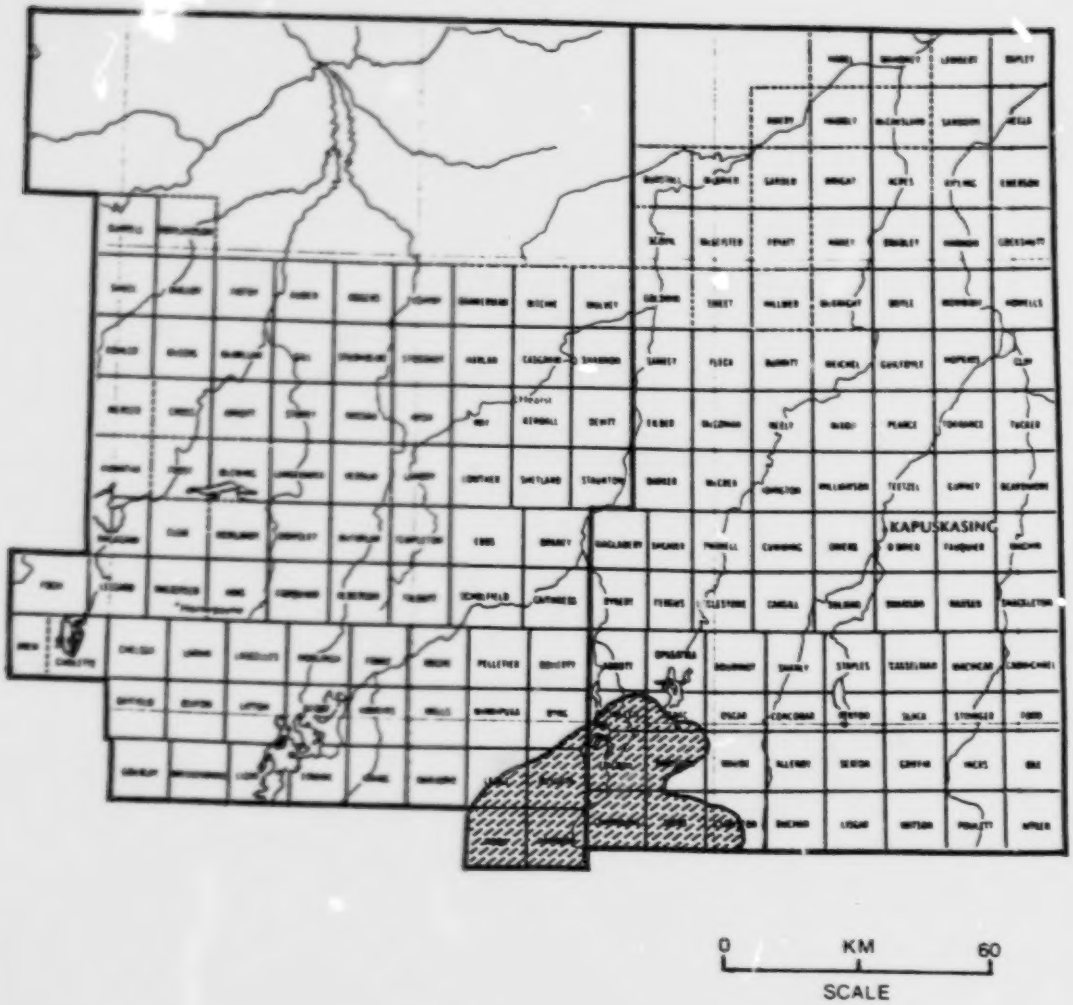
SPRUCE BUDWORM

Areas within which defoliation
occurred in 1976

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
0
KM
60
SCALE

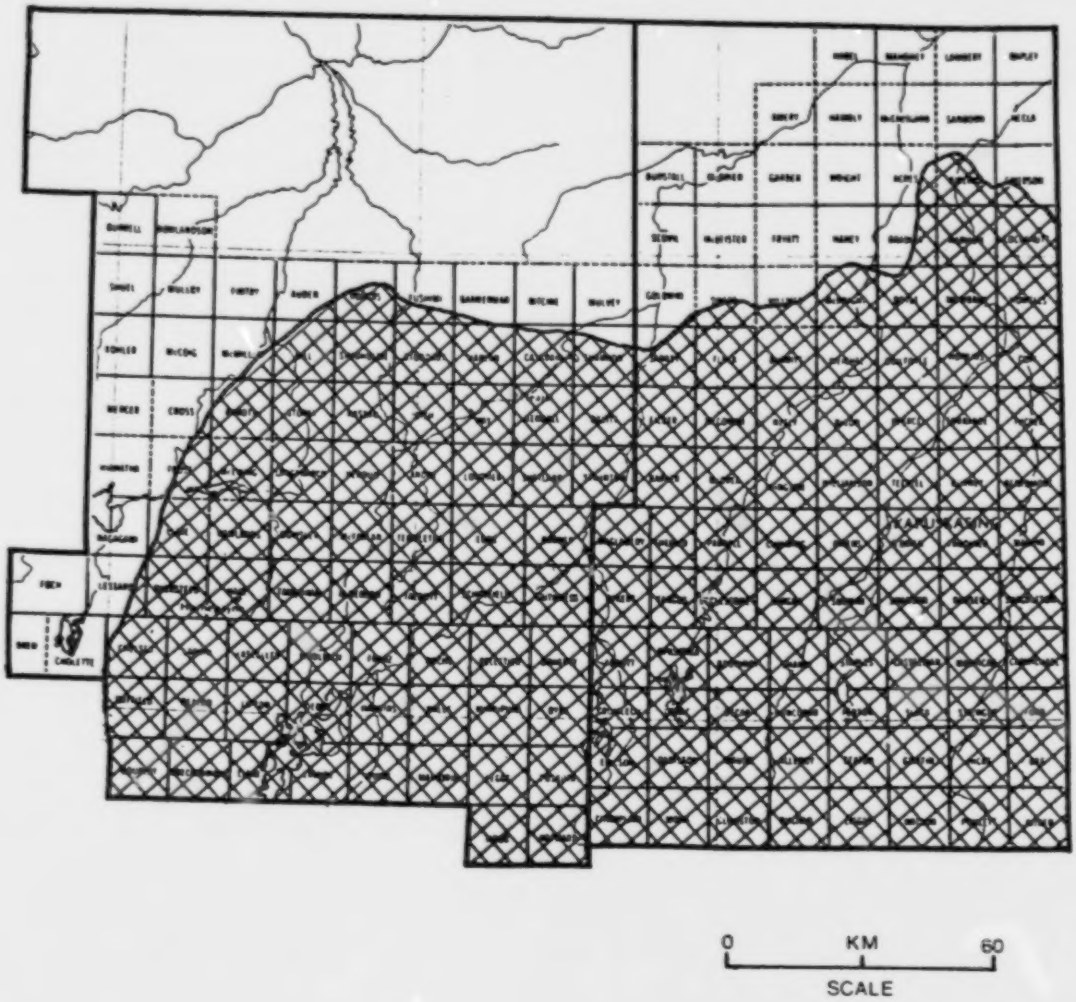
SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1976

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

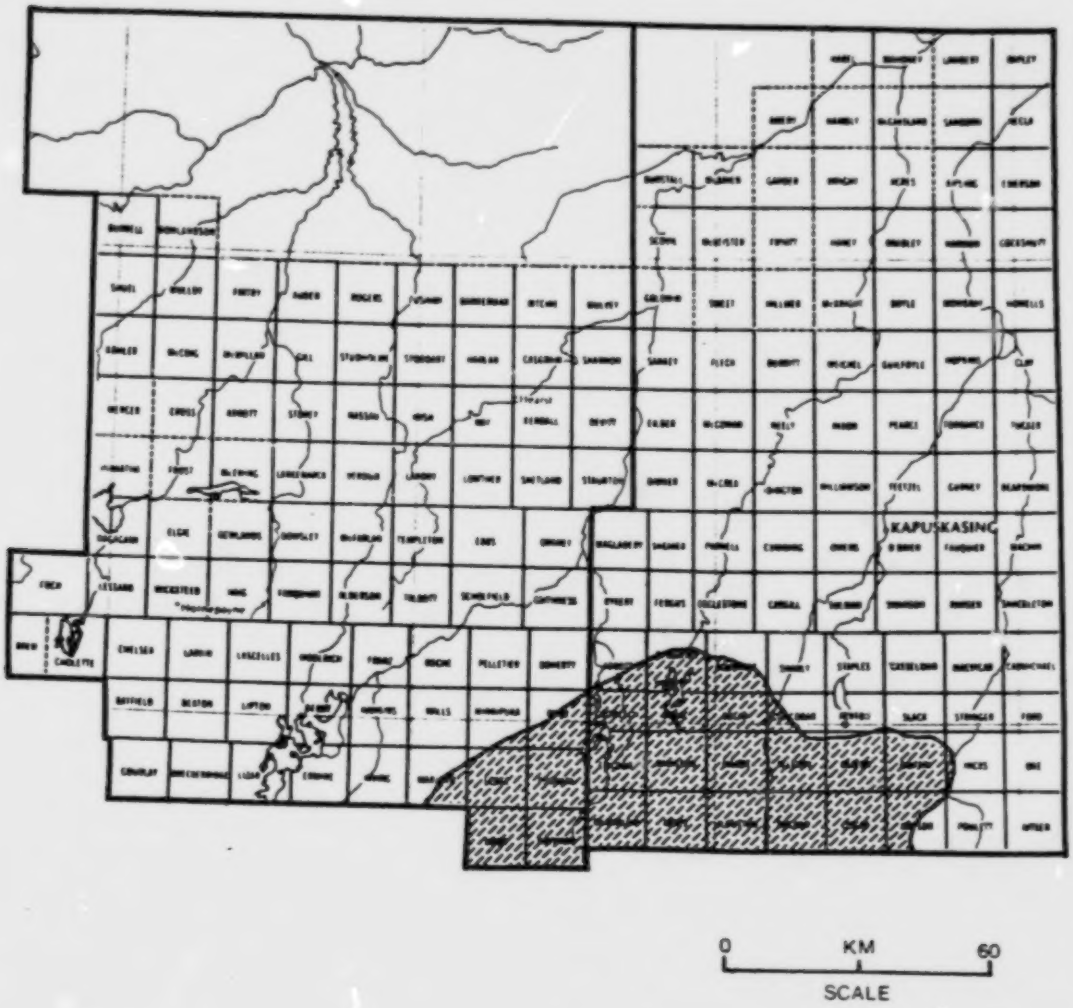
SPRUCE BUDWORM

Areas within which defoliation
occurred in 1977

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

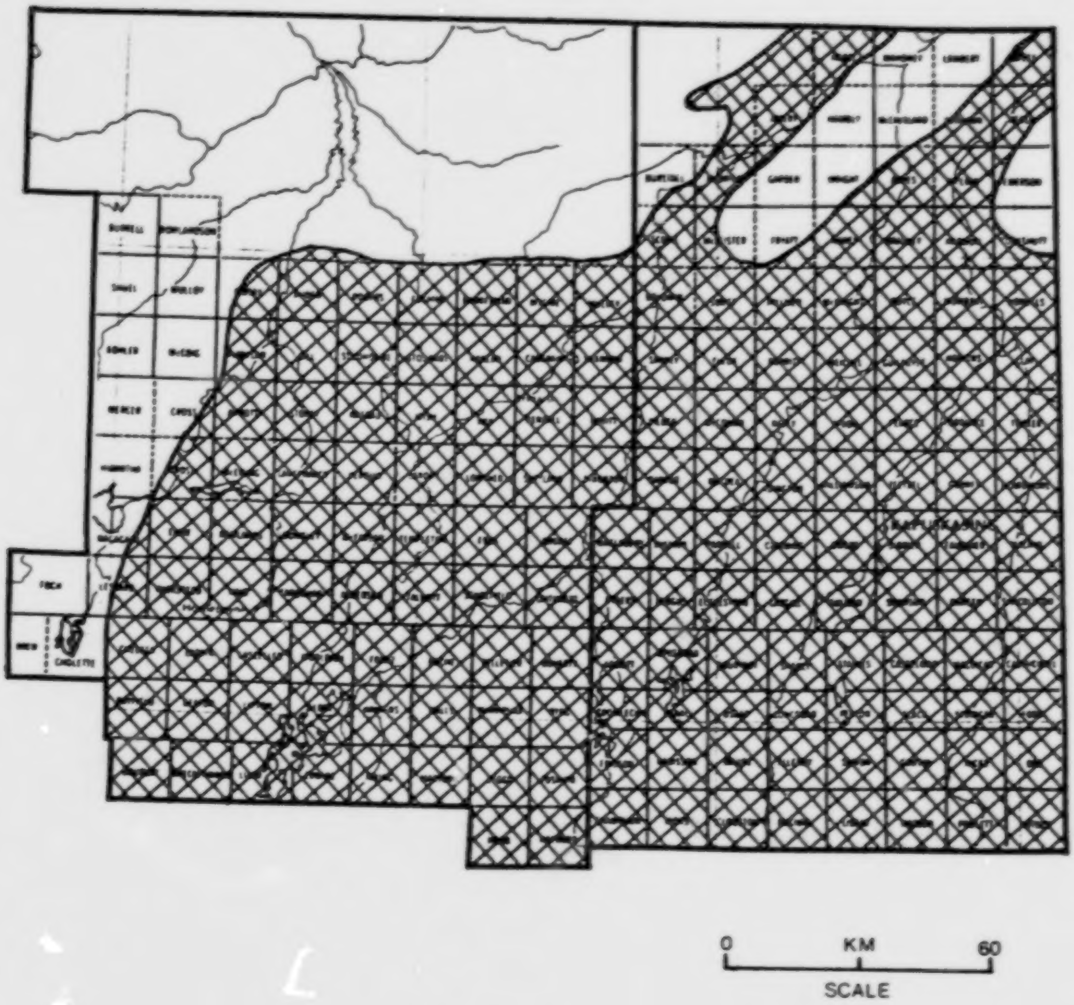
SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1977

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS



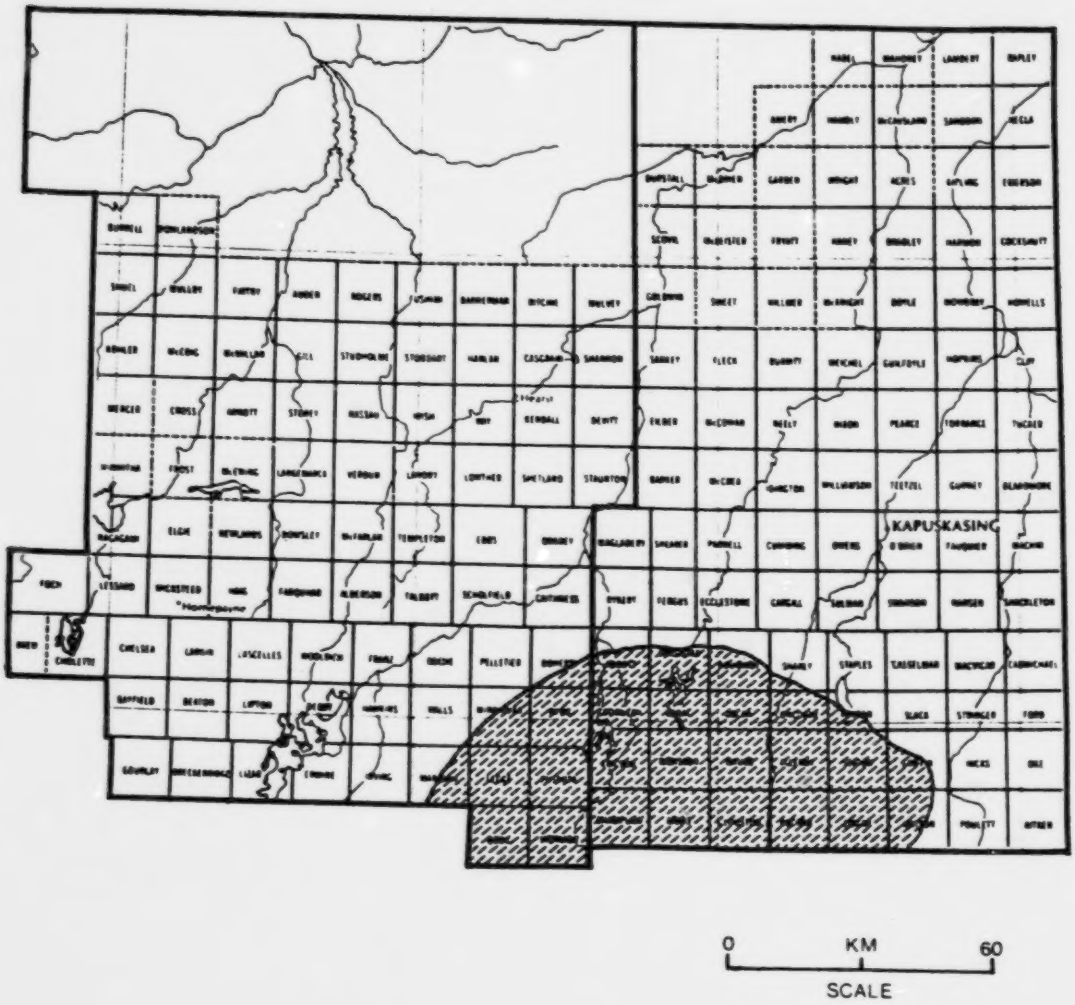
SPRUCE BUDWORM

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

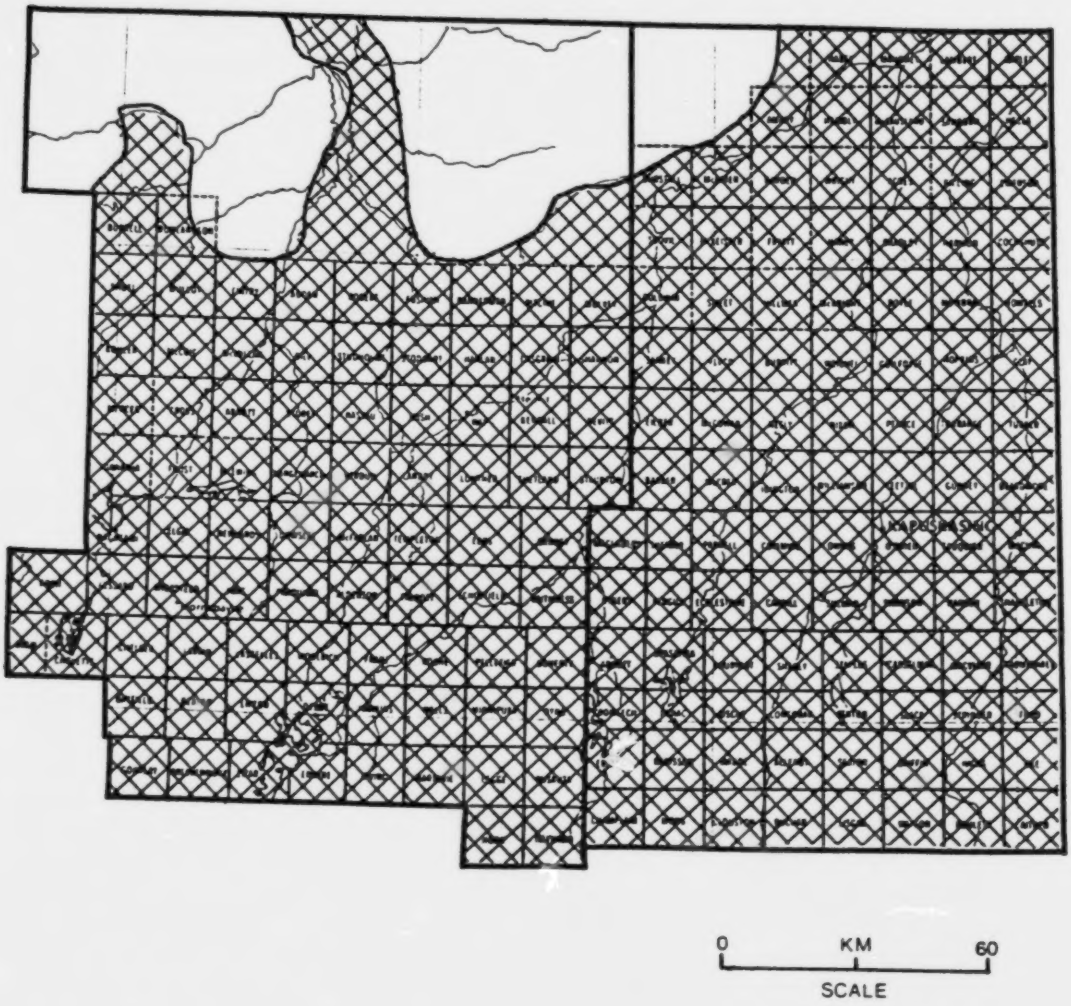
SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1978

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

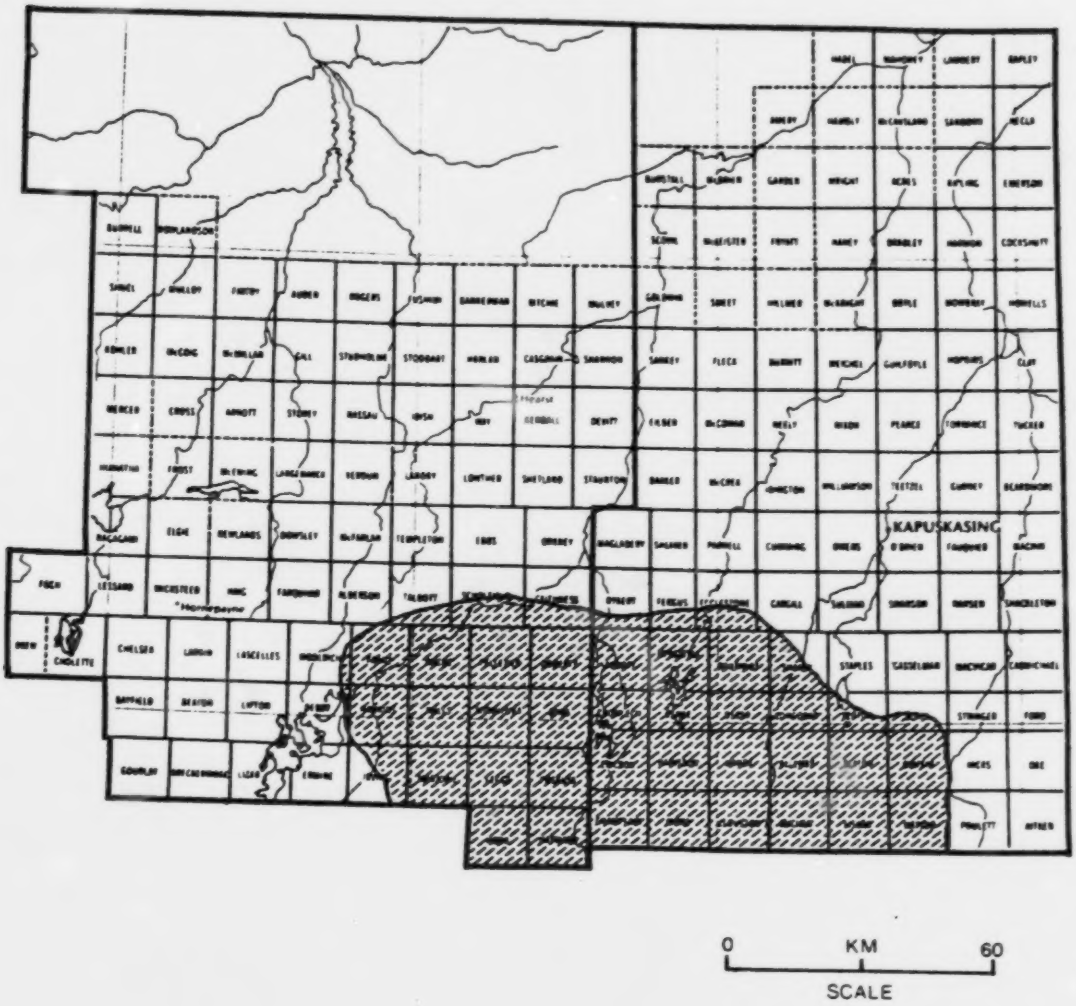
SPRUCE BUDWORM

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


Hearst
KAPUSKASING
0
KM
60
SCALE

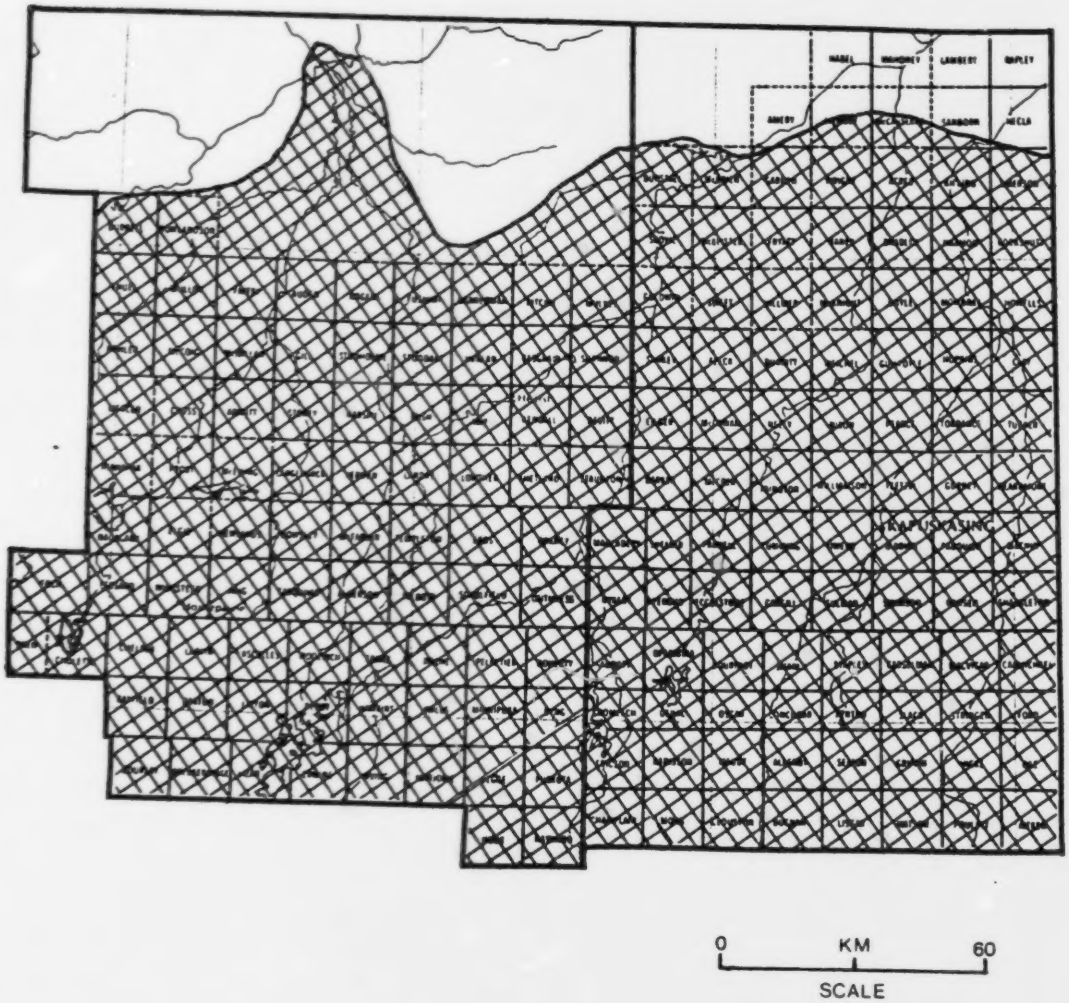
SPRUCE BUDWORM

Areas within which balsam fir
whole tree and top mortality
occurred in 1979

LEGEND

Mortality ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

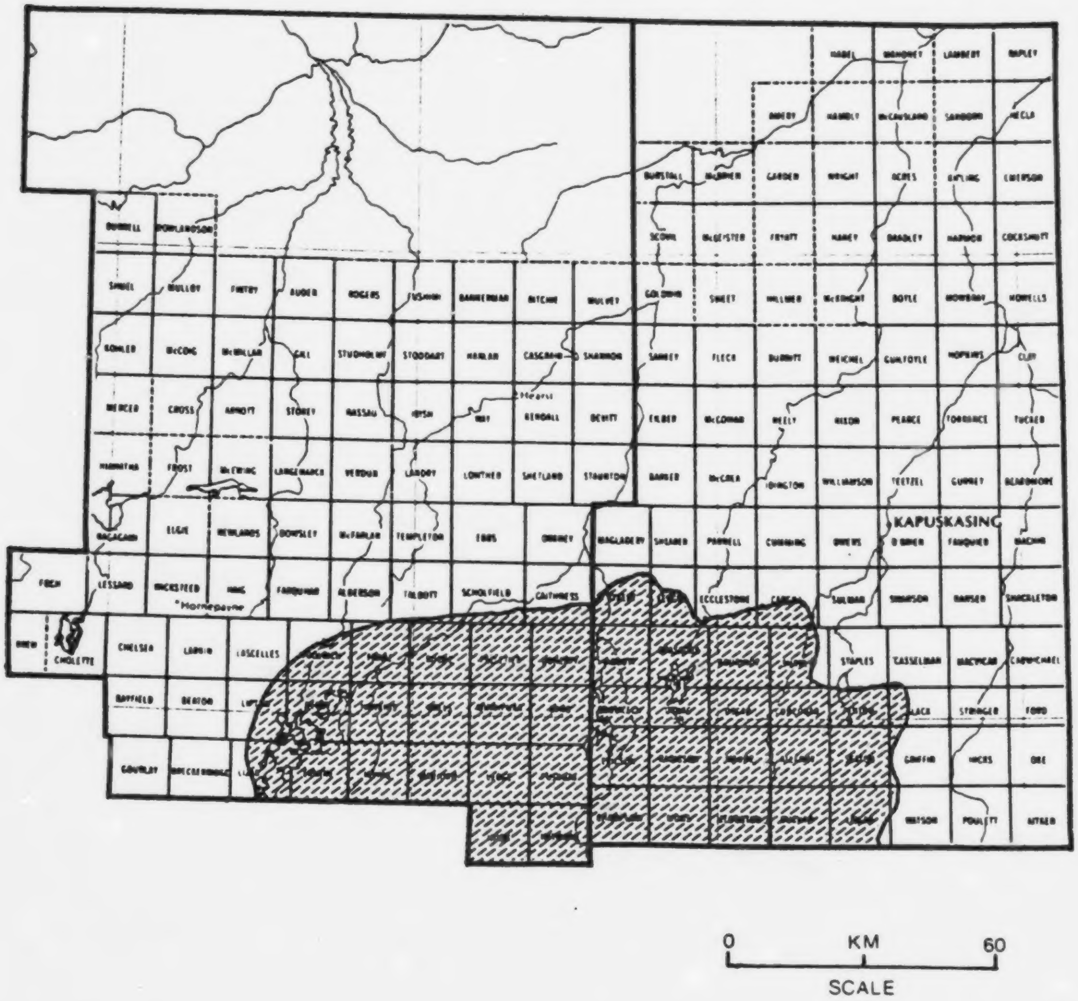
SPRUCE BUDWORM

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


MULLOY
FINTRY
AUDEN
ROGERS
FUSHIMI
BANNERMAN
RITCHIE
MULVEY
McCOIG
McMILLAN
GILL
STUDHOLME
STODDART
HANLAN
CASGRAIN
SHANNON
MERCER
CROSS
ARNOTT
STOREY
NASSAU
IRISH
KENDALL
DEVITT
Hearst
HIAWATHA
FROST
McEWING
LANGEMARCK
VERDUN
LANDRY
LOWTHER
SHETLAND
STAUNTON
NAGAGAMI
ELGIE
NEWLANDS
DOWSLEY
McFARLAN
TEMPLETON
EBBS
ORKNEY
FOCH
LESSARD
HAIG
FARQUHAR
ALDERSON
TALBOTT
SCHOLFIELD
CAITHNESS
Hornepayne
CHOLETTE
CHELSEA
LARKIN
LASCELLES
BAYFIELD
BEATON
GOURLAY
HABEL
LAMBERT
RIPLEY
HAMBLY
McCAUSLAND
SANBORN
HECLA
BURSTALL
GARDEN
WRIGHT
ACRES
KIPLING
EMERSON
SCOVIL
FRYATT
BRADLEY
COCKSHUTT
BOYLE
MOWBRAY
HOWELLS
SANKEY
FLECK
WEICHEL
GUILFOYLE
HOPKINS
EILBER
McCOWAN
NEELY
NIXON
PEARCE
TORRANCE
TUCKER
BARKER
McCREA
IDINGTON
WILLIAMSON
TEETZEL
GURNEY
BEARDMORE
KAPUSKASING
MAGLADERY
SHEARER
PARNELL
CUMMING
OWENS
O'BRIEN
FAUQUIER
MACHIN
ECCLESTONE
SULMAN
SIMPSON
SHACKLETON
STAPLES
CASSELMAN
MACVICAR
CARMICHAEL
STRINGER
FORD
GRIFFIN
HICKS
ORE
WATSON
POULETT
AITKEN
0
KM
60
SCALE

SPRUCE BUDWORM

Areas within which balsam fir whole tree and top mortality occurred in 1980

LEGEND

Mortality ▨

Aspen Defoliators, *Enargia decolor* (Wlk.), *Epinotia solandriana* L., *Gonioctena americana* (Schaef.), and *Pseudexentera oregonana* Wlshm.

Host (s): aspen

[Major]

Year		Remarks
1950		not reported
1951	*G. americana*	common on regeneration
1952-1953		not reported
1954-1957	*G. americana*	low populations
1958		not reported
1959	*G. americana*	light defoliation in Casgrain Twp
	E. solandriana	light infestation in McMillan Twp
1960	*G. americana*	light defoliation in Lessard, Wicksteed, and Chelsea twps
	E. decolor	light infestation in Arnot Twp
1961	*E. decolor*	light infestations in Gill Twp
	E. solandriana	low populations
1962	*E. decolor*	light infestations in Gill and Clavet twps
	E. solandriana	low populations
1963	*E. decolor*	decline to low levels
	E. solandriana	low populations
1964	*E. solandriana*	low populations
1965	*P. oregonana*	moderate-to-severe defoliation (see map, page 46)
1966	*G. americana*	low populations
	P. oregonana	decline in populations
1967	*E. decolor*	low populations
	G. americana	light defoliation in Lessard Twp
1968	*E. solandriana*	low populations in Wicksteed and Kohler twps
1969	not reported	

(cont'd)

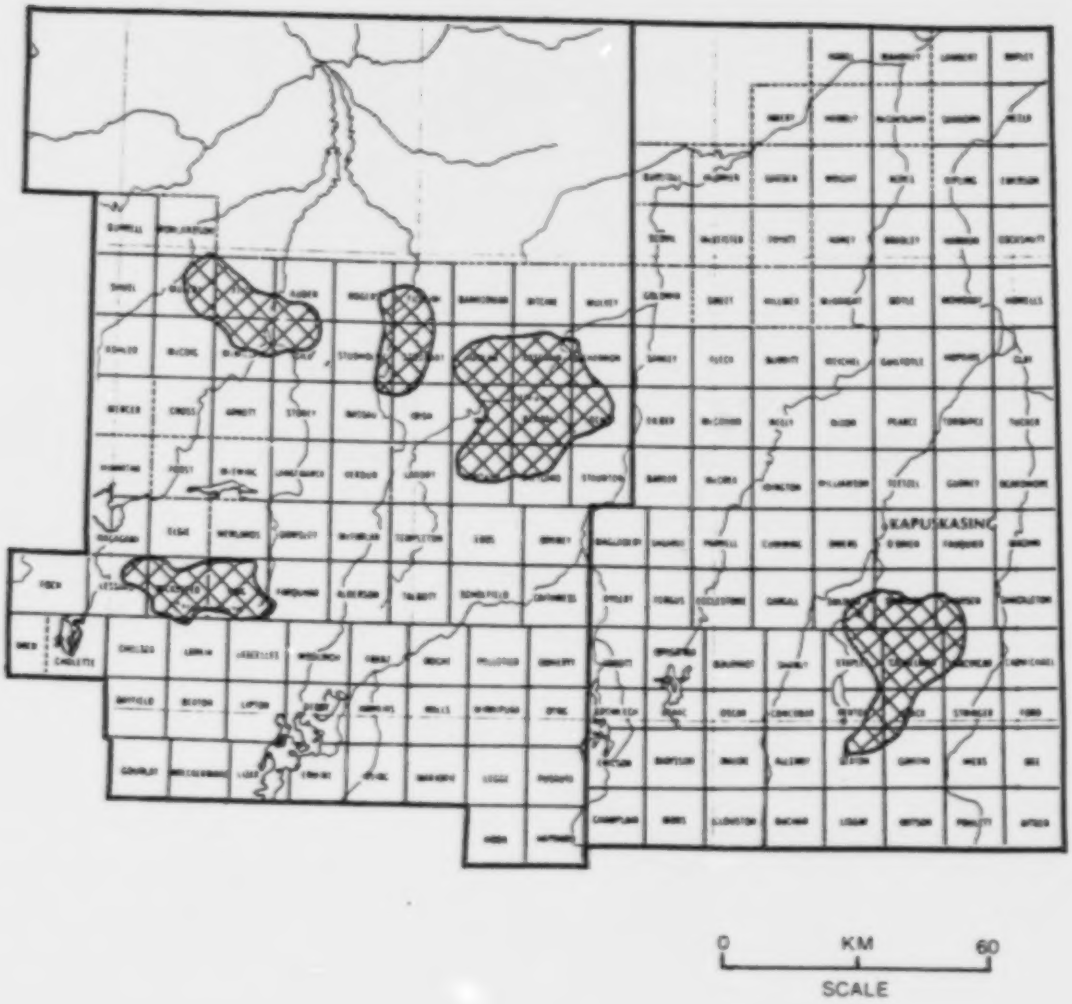
Aspen Defoliators, *Enargia decolor* (Wlk.), *Epinotia solandriana* L., *Gonioctena americana* (Schaef.), *Pseudexentera oregonana* Wlshm. (concl.)

Host (s): aspen

[Major]

Year		Remarks
1970	*E. decolor*	medium-to-severe defoliation along the Hornepayne Road, west to the Geraldton District border
1971	*E. decolor*	Populations declined to low.
1972	*E. decolor*	low populations in Elgie Twp
1973	*G. americana*	low populations
1974-1977		not reported
1978	*G. americana*	light defoliation in Studholme Twp
1979-1980		not reported

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

ASPEN LEAFROLLER
(P. oregonana)

Areas within which defoliation occurred in 1965

LEGEND

Moderate-to-severe defoliation ▨

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host (s): aspen, deciduous [Major]

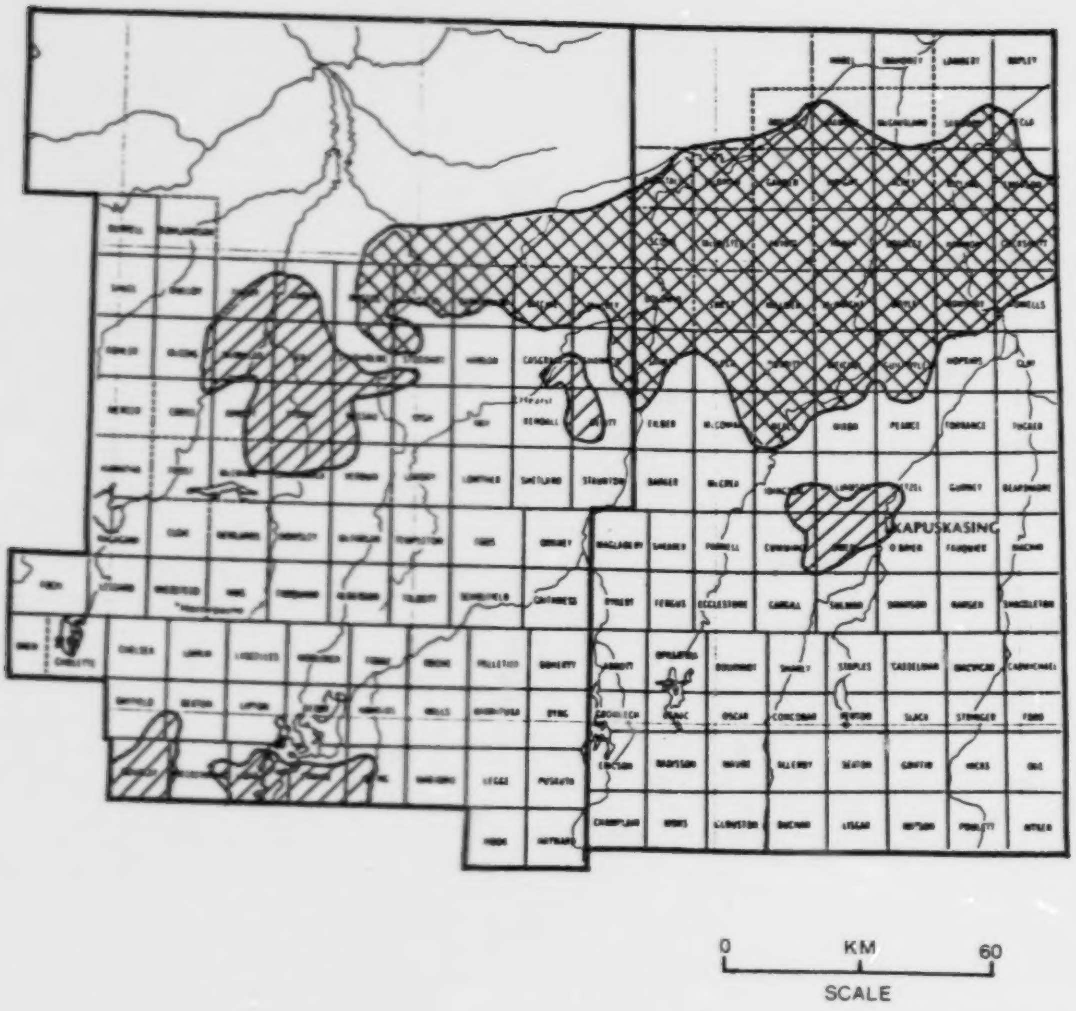
Year	Remarks
1950	Severe defoliation of hardwoods occurred in the north-eastern part of the District. A large area of light defoliation was observed in the central and southern parts (see map, page 49).
1951	A band of moderate-to-severe defoliation occurred across the northern part of the District; smaller pockets were observed in Gourlay, Lizar, Ermine and Derry twps (see map, page 50).
1952	A spectacular increase in defoliation occurred cross the northern two-thirds of the district and in a small area encompassing six townships in the south (see map, page 51).
1953	severe defoliation of poplar throughout most of the District (see map, page 52)
1954	There was a dramatic reduction in infestation; pockets of severe defoliation persisted near Hiawatha and Newlands twps (see map, page 53).
1955	a further decline; only low populations observed (see map, page 54)
1956-1964	not reported
1965	moderate-to-severe defoliation in Burrell, Shuel, Foch, and Mulloy twps; an area of approximately 80 km^2 severely defoliated north of Rogers Twp
1966	Adverse weather caused a collapse of the infestation.
1967-1968	very low populations
1969-1970	not reported
1971	pockets of light defoliation in Shuel and Burrell twps; a few larvae found in Kohler, Studholme, and Hanlan twps
1972	an increase in populations in Shuel and Burrell twps
1973	Severe defoliation occurred from the Geraldton-Hearst District boundary eastward to Kendall Twp.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (concl.)

Host (s): aspen, deciduous [Major]

Year	Remarks
1974	continued severe defoliation in an area of approximately 440 km^2 between the Geraldton-Hearst district boundary and Devitt Twp (see map, page 55)
1975	Severe defoliation persisted from Kohler Twp northeast to the Kapuskasing-Hearst district boundary (see map, page 56).
1976	further increase in severe defoliation (see map, page 57)
1977	a slight decline in the main body of infestation, but new pockets of severe defoliation in Shuel, Kohler and Wicksteed twps (see map, page 58)
1978	little change in infestation boundaries, except for nine new pockets of severe defoliation in the southwestern part of the District (see map, page 59)
1979	a major decline in population levels; numerous small pockets of moderate-to-severe defoliation throughout the District (see map, page 60)
1980	pockets of light defoliation at several locations

HEARST AND KAPUSKASING DISTRICTS


Hearst
KAPUSKASING
0
KM
60
SCALE

FOREST TENT CATERPILLAR

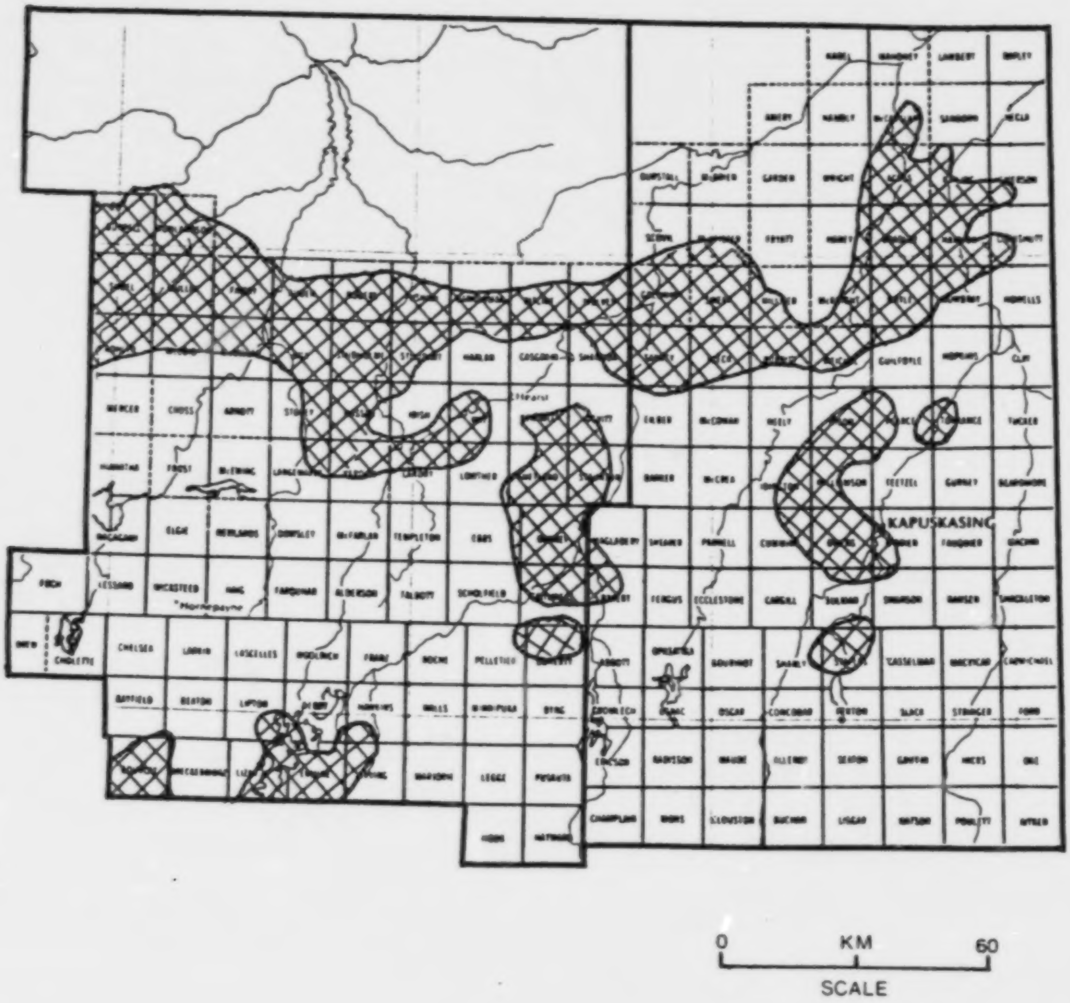
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation

Moderate-to-severe defoliation ▩

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

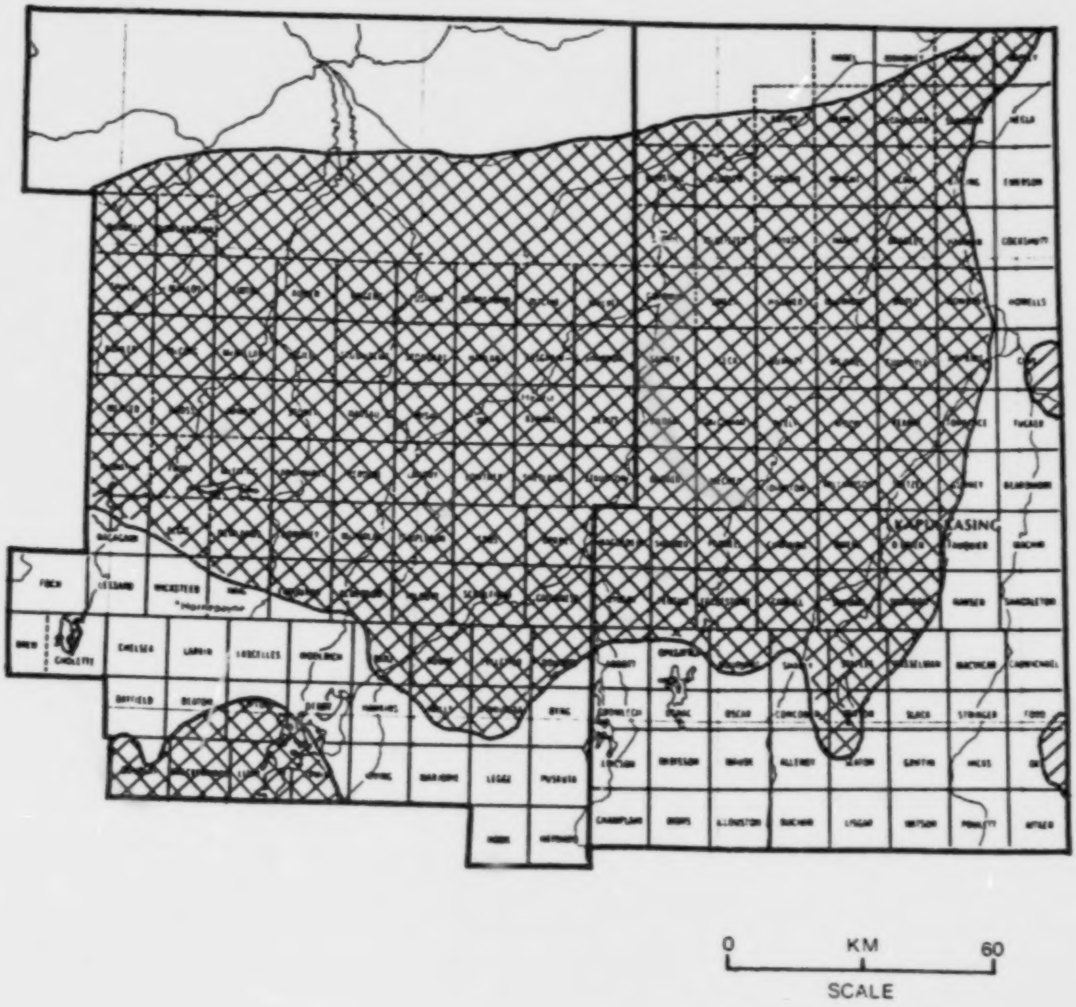
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1951

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

FOREST TENT CATERPILLAR

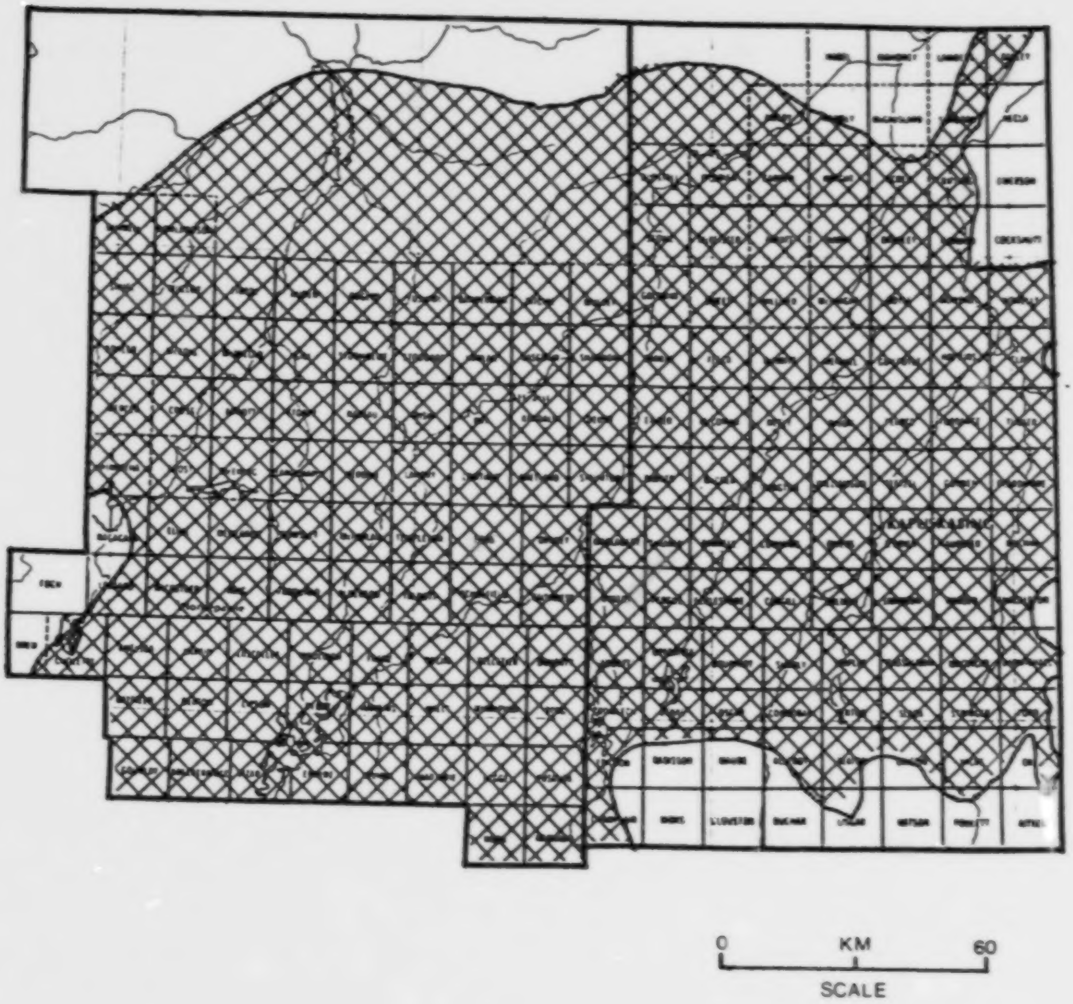
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ▩

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
0
KM
60
SCALE

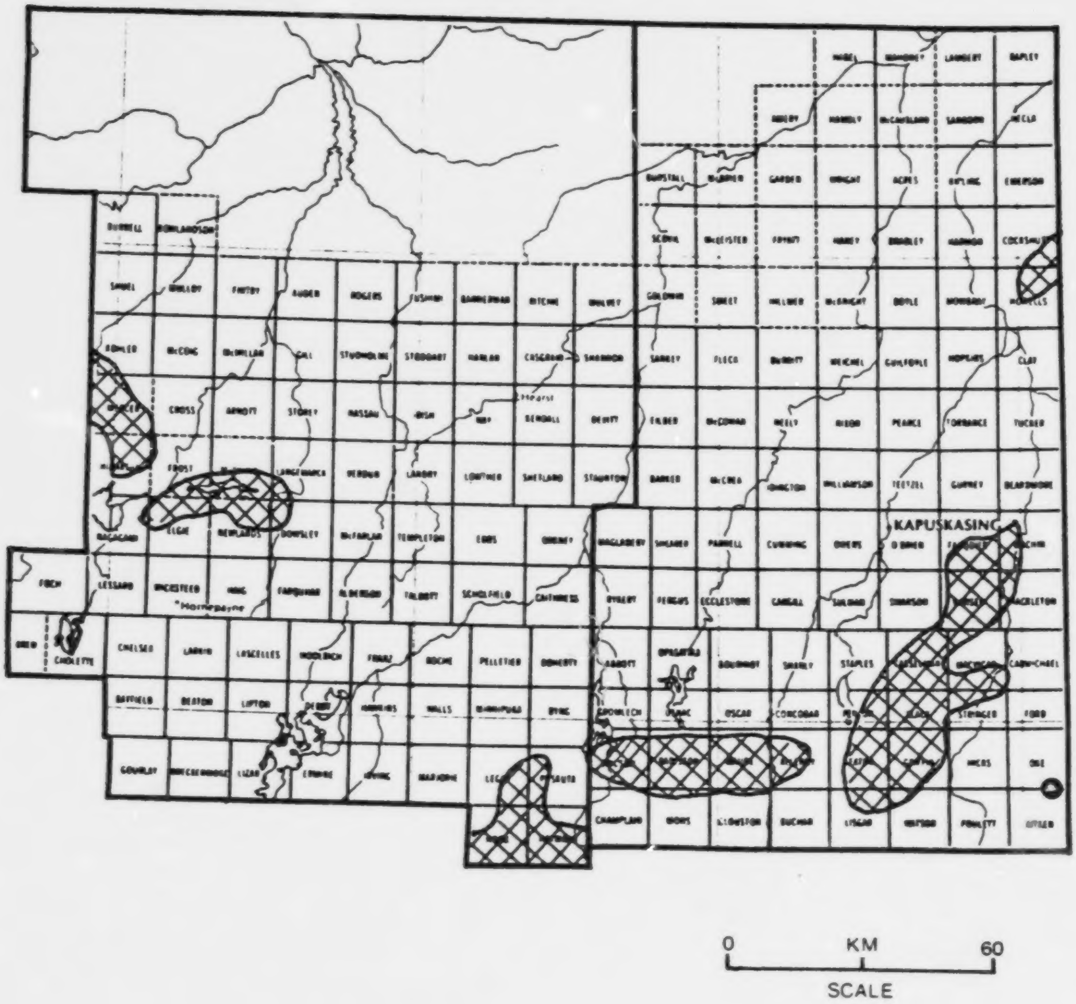
FOREST TENT CATERPILLAR

Areas within which defoliation
occurred in 1953

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


Hearst
Hornepayne
KAPUSKASING
0
KM
60
SCALE

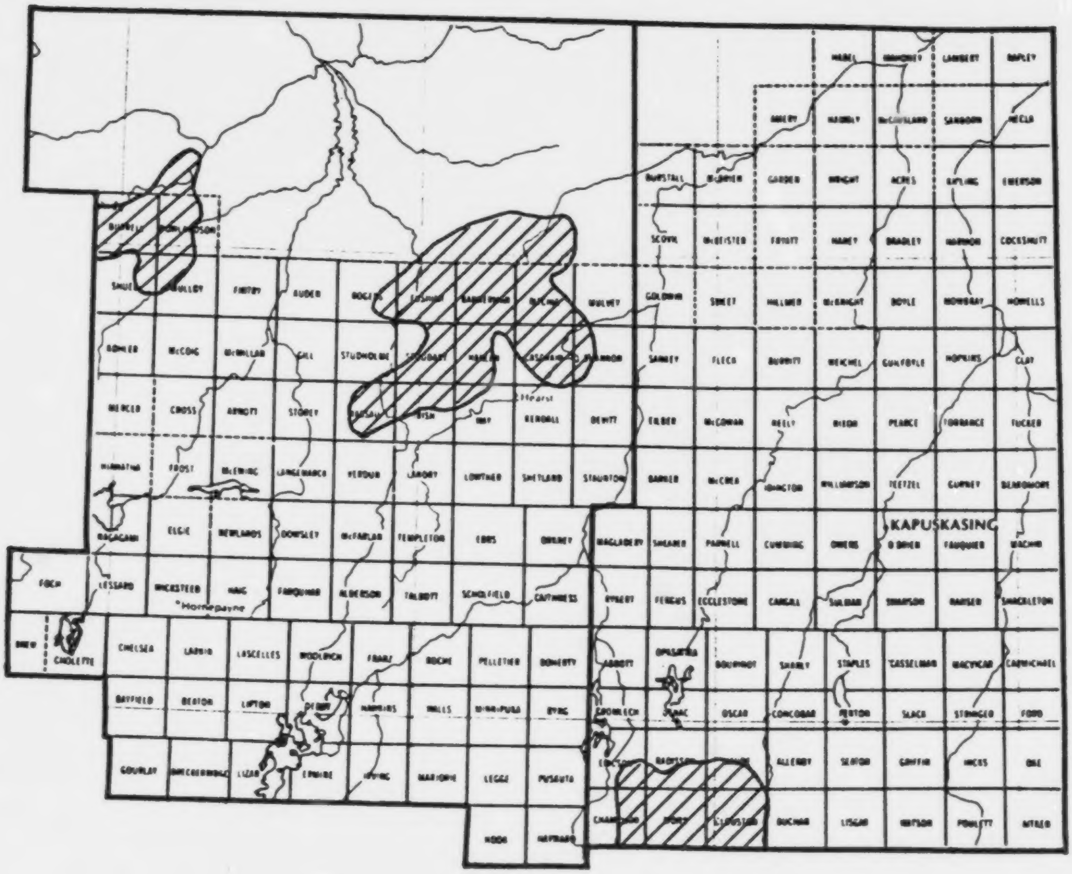
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1954

LEGEND

Moderate-to-severe defoliation ● or ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

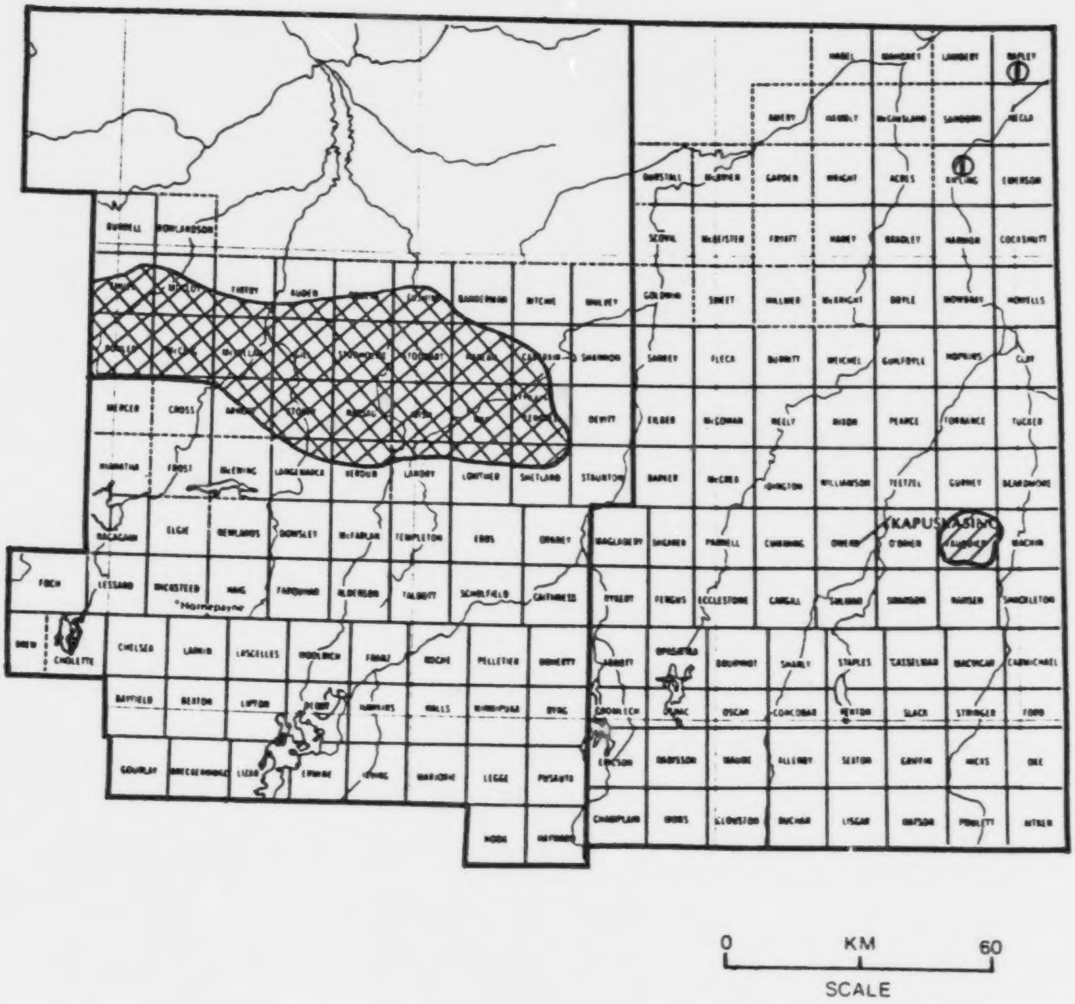
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hornepayne
0
KM
60
SCALE

FOREST TENT CATERPILLAR

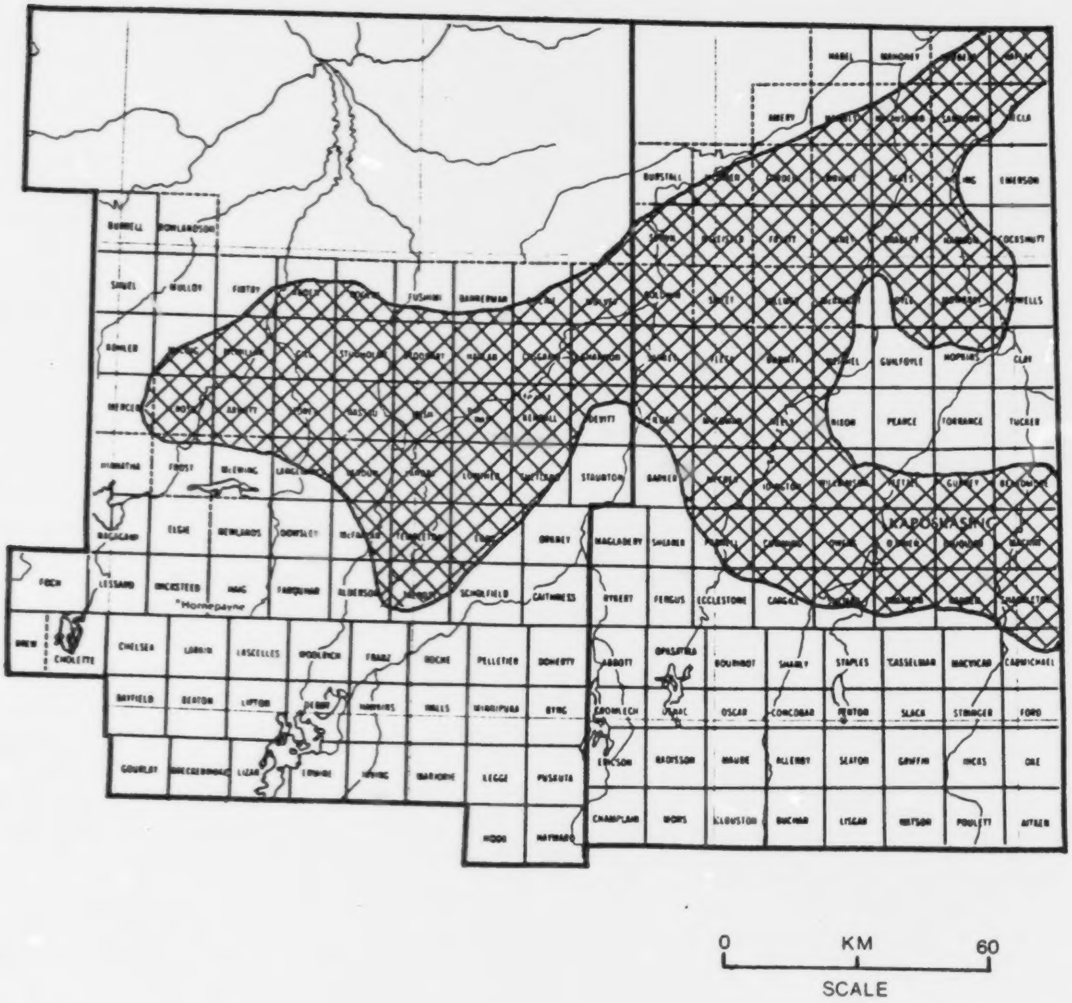
Areas within which defoliation occurred in 1974

LEGEND

Light defoliation ▨ or ⦶

Moderate-to-severe defoliation ▦

HEARST AND KAPUSKASING DISTRICTS


BURWELL
ROWLANDSON
SHUEL
MULLOY
FINTRY
FUSHIMI
BANNERMAN
BOWLER
MERCER
HIAWATHA
FROST
McEWING
ELGIE
DOWSLEY
FOCH
LESSARD
FARQUHAR
ALDERSON
SCHOLFIELD
CAITHNESS
ORKNEY
"Hornepayne
CHOLETTE
CHELSEA
LARKIN
LASCELLES
FRANZ
ROCHE
PELLETIER
DOHERTY
BAYFIELD
BEATON
LIPTON
WALLS
BYNG
GOURLAY
LIZAR
LEGGE
PUSKUTA
HOOD
MABEL
MAHONEY
AMERY
HECLA
BURSTALL
EMERSON
COCKSHUTT
HOWELLS
GUILFOYLE
HOPKINS
CLAY
RISON
PEARCE
TORRANCE
TUCKER
DEWITT
STAURTON
BARKER
GURNEY
KAPUSKASING
MAGLADERY
RYBERT
FERGUS
ECCLESTONE
CARGILL
ABBOTT
OPASATIKA
BOURINOT
STAPLES
CASSELMAN
MACVICAR
CARMICHAEL
CROMLECH
OSCAR
CONCOBAR
SLACK
STRINGER
FORD
ERICSON
RADISSON
ALLENBY
SEATON
GRIFFIN
OKE
CHAMPLAIN
KLOUSTON
LISGAR
POULETT
AITKEN
0
KM
60
SCALE

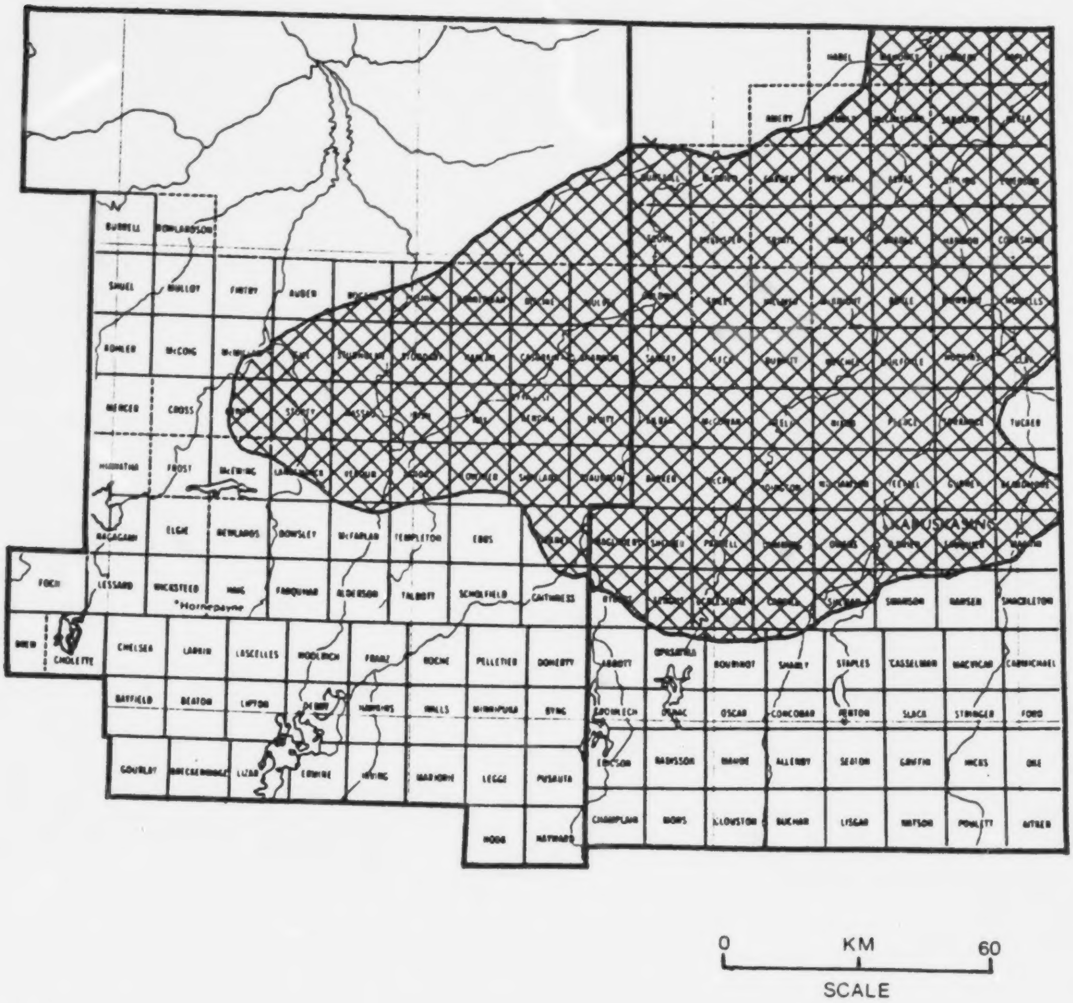
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


BURRELL
DONALDSON
SHUEL
MULLOY
FINTRY
AUDEN
FOWLER
McCOIG
MERCER
CROSS
HIAWATHA
FROST
McEWING
NAGAGAMI
ELGIE
NEWLANDS
DOWSLEY
McFARLAN
TEMPLETON
EBBS
FOCH
LESSARD
WICKSTEED
HAIG
FARQUHAR
ALDERSON
TALBOT
SCHOLFIELD
CAITHNESS
Hornepayne
CHOLETTE
CHELSEA
LARKIN
LASCELLES
WOOLRICH
FRANZ
ROCHE
PELLETIER
DOHERTY
BAYFIELD
BEATON
LIPTON
WALLS
BYNG
GOURLAY
LIZAR
LEGGE
HODG
TUCKER
KAPUSKASING
SHANNON
RAMSEY
SHACKLETON
ABBOTT
BOURINOT
STAPLES
CASSELMAN
MACVICAR
CARMICHAEL
OSCAR
CONCOBAR
SLACK
STRINGER
FORD
ERICSON
RADISSON
ALLERBY
SEATON
GRIFFIN
ORE
CHAMPLAIN
KILOUSTON
BUCHAN
LISGAR
WATSON
POWLETT
AYLEN
0
KM
60
SCALE

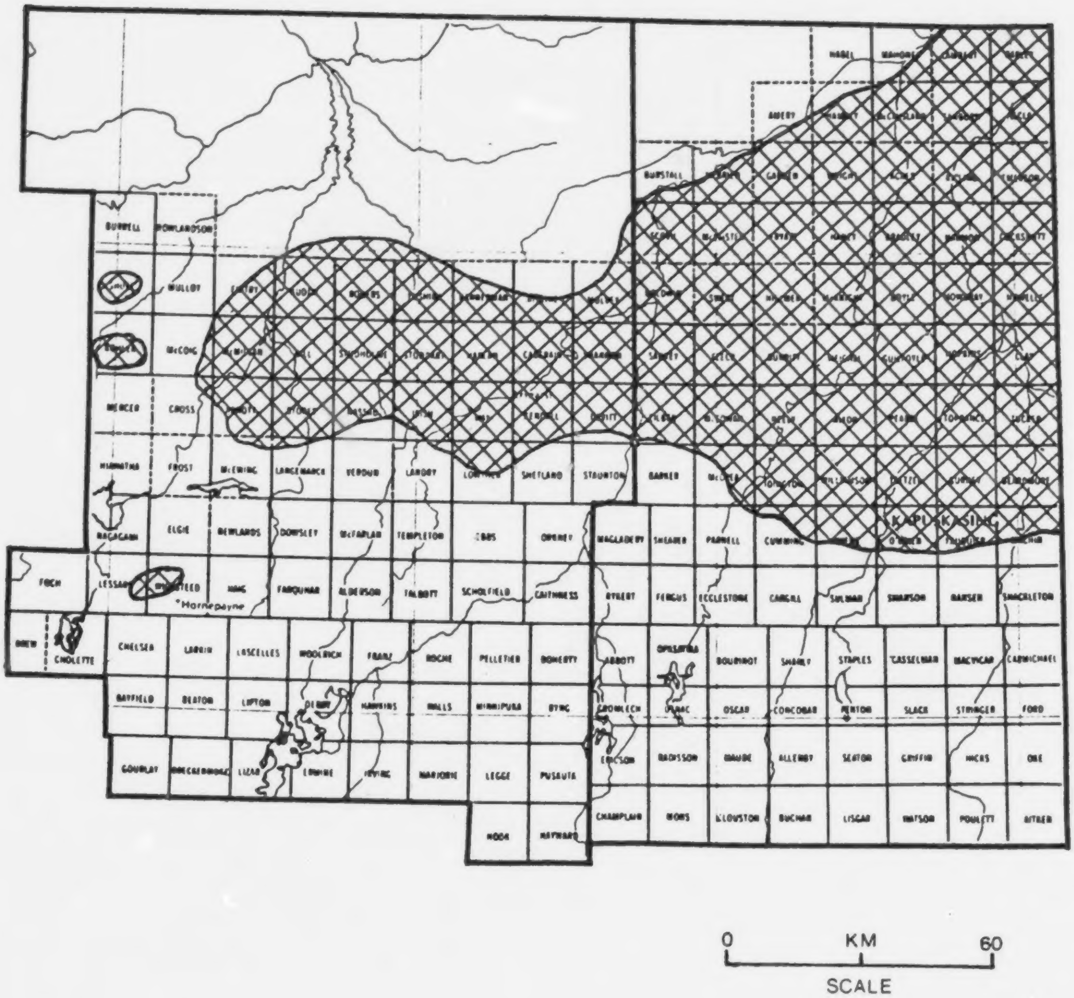
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


BURRELL
ROWLANDSON
McCOIG
MERCER
CROSS
HIAWATHA
FROST
McEWING
LANGEMARCK
VERDUN
LANDRY
SHETLAND
STAUNTON
BARKER
NAGAGAMI
ELGIE
DOWSLEY
McFARLAN
TEMPLETON
EBBS
ORKNEY
FOCH
LESSARD
HAIG
FARQUHAR
ALDERSON
TALBOTT
SCHOLFIELD
CAITHNESS
°Hornepayne
DREW
CHOLETTE
CHELSEA
LARKIN
LASCELLES
WOOLRICH
FRANZ
ROCHE
PELLETIER
DOHERTY
BAYFIELD
BEATON
LIPTON
DERRY
HAWKINS
WALLS
WINNIPUKA
BYNG
GOURLAY
BRECKENRIDGE
LIZAR
LEMOINE
IRVING
MARJORIE
LEGGE
PUSAUTE
HOOK
HAYWARD
KAPUSKASING
O'BRIEN
MAGLADERY
SHEARER
PARNELL
CUMMING
FERGUS
ECCLESTONE
CARGILL
SULMAN
SHACKLETON
ABBOTT
OPASATIKA
BOURINOT
STAPLES
CASSELMAN
MACVICAR
CARMICHAEL
CROMLECH
OSCAR
CONCOBAR
SLACK
STRINGER
FORD
ERICSON
RADISSON
MAUDE
ALLENBY
SEATON
GRIFFIN
HICKS
ORE
CHAMPLAIN
MONS
BUCHAN
LISGAR
WATSON
POULETT
AITKEN
0
KM
60
SCALE

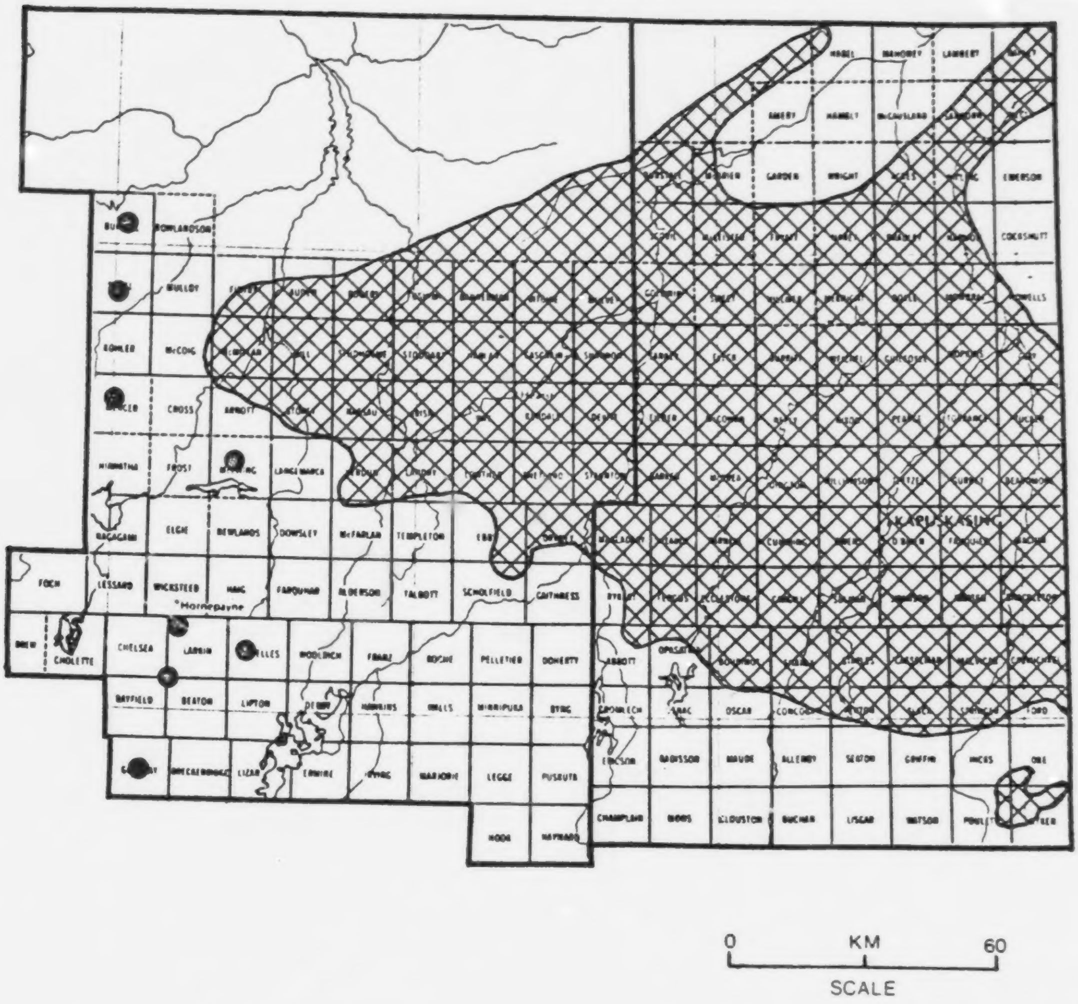
FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ▨

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hornepayne
0
KM
60
SCALE

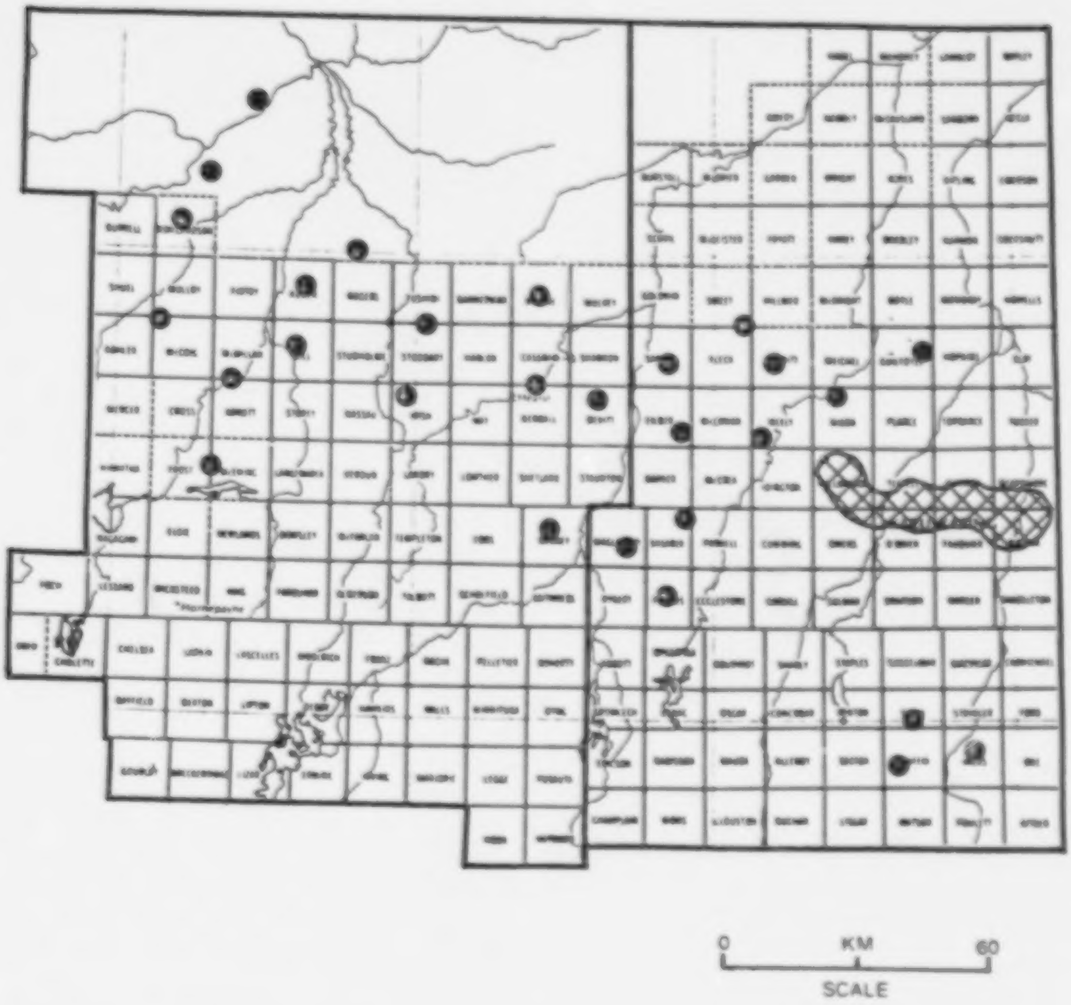
FOREST TENT CATERPILLAR

Areas within which defoliation
occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

HEARST AND KAPUSKASING DISTRICTS



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or ▨

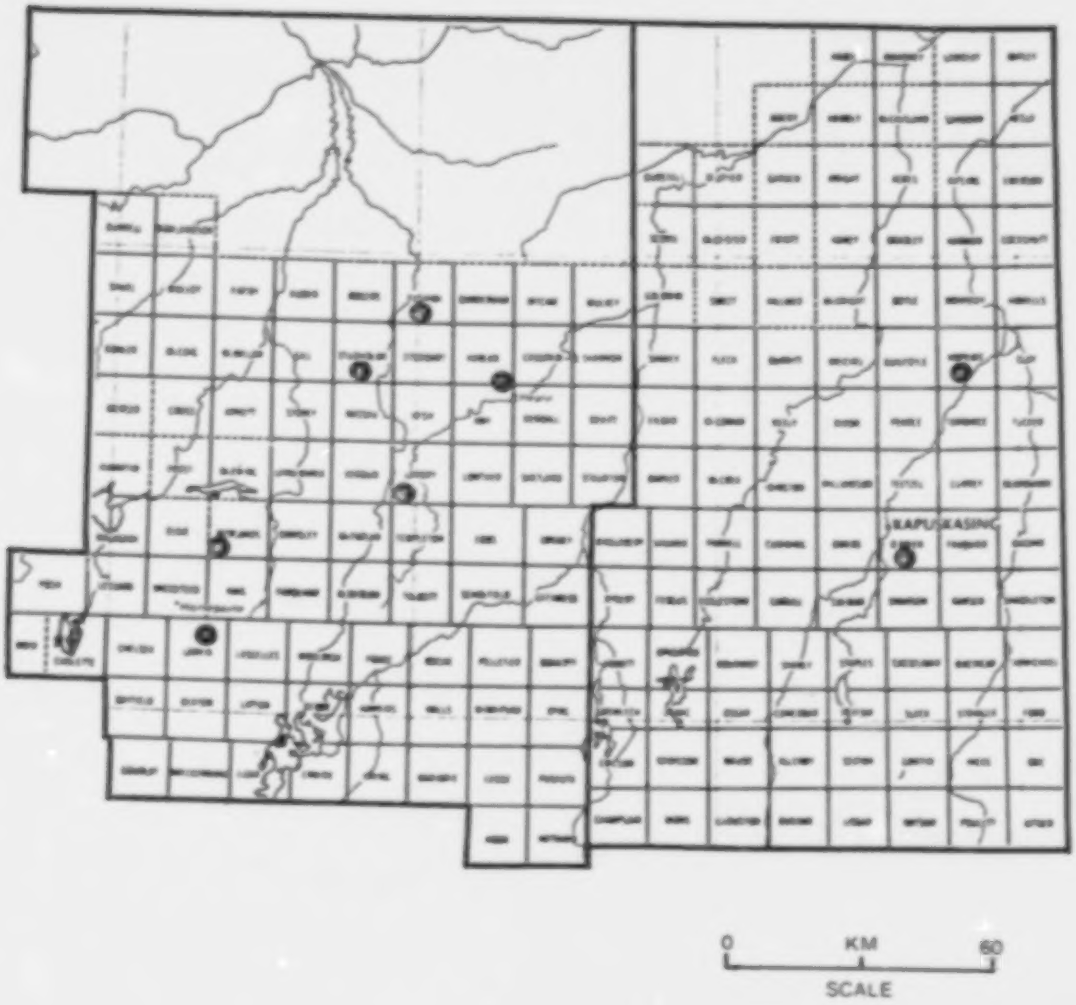
Whitespotted Sawyer, *Monochamus scutellatus* (Say)

Host(s): coniferous

[Major]

Year	Remarks
1950-1953	not reported
1954	low populations in Rogers Twp
1955	not reported
1956-1958	low populations general in the District
1959-1974	not reported
1975	high populations on skidways in Lowther Twp
1976-1978	not reported
1979	branch mortality caused by adult feeding on spruce seed trees in Larkin Twp
1980	heavy damage to a group of seed trees and residual black spruce trees in Fushimi Twp and at several other locations (see map, page 62); ground sprays with Lindane carried out on skidways to control these adults in Lowther and Anderson twps

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
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SCALE

WHITESPOTTED SAWYER

Locations where damage was observed in 1980

LEGEND

Damage areas ●

Pine Sawflies, *Neodiprion maurus* Roh., *N. nanulus nanulus* Schedl., *N. pratti banksianae* Roh. and *N. virginianus*

Host(s): jP

[Major]

Year		Remarks
1950-1952		not reported
1953	*N. nanulus nanulus*	light infestation in Franz Twp
1954	*N. nanulus nanulus*	low populations in Franz Twp
	N. banksianae	very low populations in Franz Twp
	N. virginianus	light defoliation in McMillan and Devitt twps
1955	*N. nanulus nanulus*	very low populations in Franz Twp
	N. banksianae	very low populations in Franz and Foch twps
	N. virginianus	very low populations in McMillan, Stoddart and Devitt twps
1956	*N. banksianae*	very low populations in Foch and Franz twps
	N. virginianus	very low populations in McMillan and Studholme twps
1957	*N. virginianus*	low populations in Gill and Hawkins twps
1958	*N. virginianus*	low populations in Gill Twp
1959	*N. maurus*	low populations in Wicksteed Twp
	N. nanulus nanulus	low populations in Wicksteed Twp
	N. virginianus	low populations in McMillan and Wicksteed twps
1960	*N. maurus*	one colony found in McMillan Twp
	N. virginianus	light infestations along the Hornepayne Road, and in Kohler, McCoig, McMillan, Gill, Studholme, and Lowther twps
1961	*N. nanulus nanulus*	one colony in McMillan Twp
	N. virginianus	low numbers in McMillan, Wicksteed and Gill twps
1962	*N. virginianus*	low numbers in McMillan and Wicksteed twps

(cont'd)

Pine Sawflies, *Neodiprion maurus* Roh., *N. nanulus nanulus* Schedl., *N. pratti banksianae* Roh. and *N. virginianus* (concl.)

Year		Remarks
1963		not reported
1964-1966	*N. virginianus*	low numbers in Wicksteed and McMillan twps
1967	*N. maurus*	low populations in Dowsley and Elgie twps
	N. virginianus	low numbers in Studholme, Elgie and Beaton twps
1968	*N. virginianus*	low numbers in Studholme, Wicksteed and McMillan twps
1969-1975		not reported
1976-1980	*N. virginianus*	low numbers in Gill, Studholme and McMillan twps

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck)

Host (s): jP

[Minor]

Year	Remarks
1950-1954	not reported
1955	light infestation in Studholme Twp
1956	population decline in Studholme Twp
1957	increases in populations in Wicksteed, Nagagami, and Derry twps
1958-1960	low levels in Byng Twp
1961	low populations in Wicksteed and McMillan twps
1962	low levels in Sankey Twp
1963-1964	not reported
1965	low population levels in Gill and McMillan twps
1966-1973	not reported
1974-1980	low populations general in the District

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

Host (s): aspen

[Major]

Year	Remarks
1950	common in the District
1951	severe defoliation in Kohler and Hanlan twps
1952	decline in populations in Kohler and Hanlan twps
1953-1955	not reported
1956-1959	common in the District
1960	moderate-to-severe browning
1961-1970	low populations general in the District
1971	increase in populations in Wicksteed Twp
1972-1974	low populations general in the District
1975-1976	not reported
1977	low populations general in the District
1978	high populations in Beaton Twp
1979	severe browning along Hwy 631 from Gourlay Twp north to McMillan Twp
1980	a general decline in populations

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Host (s): spruce

[Major]

Year	Remarks
1950-1951	low populations in the District
1952	severe defoliation of small trees in Hanlan Twp
1953	low populations in the District
1954-1956	moderate-to-severe defoliation in McMillan, Kendall, and Devitt twps
1957-1958	light defoliation in McMillan Twp
1959-1961	severe defoliation in McMillan Twp
1962	decline in populations in McMillan Twp
1963	low populations in the District
1964	not reported
1965	Populations increased; there was severe defoliation in Way Twp and light defoliation in Rogers Twp
1966	severe defoliation in Way and McMillan twps; light defoliation in Stoddart Twp
1967	medium defoliation in Elgie and Casgrain twps; light defoliation in Rogers and Devitt twps
1968-1969	light defoliation in Wicksteed, McMillan, and Rogers twps
1970-1971	severe defoliation on ornamentals and hedgerows in urban areas
1972-1974	light defoliation on ornamentals in urban areas
1975-1978	severe defoliation in plantations and on ornamentals in urbran areas
1979	decline in populations general in the District
1980	a further decline in populations

White Pine Weevil, *Pissodes strobi* (Peck)

Host (s): pine, spruce

[Major]

Year	Remarks
1950-1955	not reported
1956	severe damage in Franz Twp (7% infested)
1957	severe damage in Hawkins Twp (14% infested)
1958	light-to-moderate damage in Franz Twp (5% infested)
1959-1963	not reported
1964	increase in populations in McCoig and Kohler twps
1965	high damage in Wicksteed Twp (32% infested); light damage in Studholme Twp (2% infested)
1966	high damage in Wicksteed Twp (19% infested); light damage in Stoddart Twp
1967	light damage in Wicksteed Twp
1968	decline in infestations; light-to-moderate damage in Studholme and Wicksteed twps
1969-1975	not reported
1976	low populations in Lowther Twp (3% infested); high populations in Way Twp (8% infested)
1977	low populations in Lowther Twp (5% infested); high damage in Way Twp (9% infested)
1978	low populations in Way and Lowther twps (3% and 1% infested, respectively)
1979-1980	low populations in Studholme Twp (2% infested)

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host (s): larch

[Major]

Year	Remarks
1950	low populations
1951	light defoliation across the northern part of the District between Shuel and Devitt twps and at a few locations in the south; moderate defoliation in Shuel and Kohler twps
1952	an increase in populations, with numerous stands of larch moderately to severely defoliated
1953	a further increase in populations; numerous stands severely defoliated in the northern part of the District
1954	general increases in populations; most stands severely defoliated
1955	all stands examined severely defoliated
1956	A major decline in populations occurred; light-to-moderate defoliation was general in the District.
1957	Populations declined further in the northern part of the District; light-to-moderate defoliation was observed in the southeastern part.
1958	An increase in intensity occurred at numerous locations in the southern part of the District.
1959	little change in infestations, except for a population increase on the southern boundary of the District
1960	a further increase in populations; severe defoliation observed in most stands examined
1961	Populations declined; moderate defoliation persisted in the western part of the District.
1962	a further decline; very light defoliation at numerous locations, with moderate defoliation west of the Hornepayne road; high tree mortality in the western part and low tree mortality in the eastern part of the District

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (concl.)

Host (s): larch

[Major]

Year	Remarks
1963	Light-to-moderate infestations persisted west of the Hornepayne Road. Some new tree mortality occurred in the northwestern part of the District.
1964	light defoliation at three locations west of the Hornepayne Road; less new tree mortality than in previous year
1965-1966	low populations in the District
1967	severe defoliation in Wicksteed Twp; moderate defoliation in Beaton Twp
1968-1970	light infestations in McMillan, Wicksteed, and Haig twps
1971	moderate defoliation in the southwestern part of the District
1972-1975	low populations general in the District
1976-1977	moderate defoliation between Hearst and the Geraldton-Hearst district border
1978	a general decline in populations, except in McCoig Twp where trees in a 5-ha stand were 10% defoliated
1979-1980	Severe defoliation persisted in the 5-ha stand in McCoig Twp. Pockets of light defoliation were observed at numerous other locations.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)

Host (s): mountain-ash

[Major]

Year	Remarks
1950-1961	not reported
1962	light defoliation in Minnipuka Twp
1963-1969	not reported
1970	new distribution records established in Studholme and Kohler twps

(cont'd)

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) (concl.)

Host (s): mountain-ash [Major]

Year	Remarks
1971	new northern distribution recorded in Rogers Twp
1972-1973	not reported
1974	severe defoliation of ornamentals in urban areas
1975	lower levels of infestation in the District
1976-1977	severe defoliation of ornamentals in the town of Hearst
1978	severe defoliation of ornamentals in Elgie Twp
1979-1980	severe defoliation of ornamentals in the District

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)

Host (s): birch [Major]

Year	Remarks
1950-1955	not reported
1956-57	low populations in the District
1958	not reported
1959	low populations in Wicksteed Twp
1960	not reported
1961	severe browning in Wicksteed and Minnipuka twps
1962	decline in populations in Wicksteed Twp
1963	light browning in Wicksteed Twp
1964	light browning in Wicksteed Twp
1965	light browning in Wicksteed Twp
1966	severe browning in Wicksteed, Stoddart, Gill, McMillan, and Fintry twps

(cont'd)

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow) (concl.)

Host (s): birch

[Major]

Year	Remarks
1967-1968	severe browning in Stoddart and Frost twps
1969	severe browning in Gill, Stoddart, and Frost twps; moderate at numerous other locations
1970	severe browning between Nagagami River in the west to the town of Hearst in the east, and along the Hornepayne Road
1971	low populations between Nagagami River in the west to the town of Hearst in the east, and along the Hornepayne Road
1972	low populations general in the District
1973-1974	not reported
1975-1977	low populations in McCoig Twp
1978-1980	not reported

Other Noteworthy Insects

Eastern Blackheaded Budworm, *Acleris variana* (Fern.)

Host (s): spruce, bF

[Minor]

Year	Remarks
1950-1960	low populations in the District
1961-1962	light infestation in Gill Twp
1963	not reported
1964-1965	low populations in the District
1966-1980	not reported

Pine Spittlebug, *Aphrophora cribrata* (Wlk.)

Host (s): jP

[Major]

Year	Remarks
1950-1958	not reported
1959	spittle masses common in the District
1960	light infestation in McMillan Twp
1961	moderate infestations in McMillan and Gill twps
1962	lower populations
1963-1980	not reported

Cedar Leafminers, *Argyresthia aureoargentella* Brower and *Pulicalvaria thujaella* (Kft.)

Host (s): eC

[Major]

Year	Remarks
1950-1957	low populations
1958	light browning in Frost, Fock, and Larkin twps
1959-1960	common throughout the District
1961	not reported
1962	common throughout the District
1963-1980	not reported

Jack Pine Resin Midge, *Cecidomyia resinicola* (O.S.)
(= *reeksi* Vock.)

Host (s): jP

[Minor]

Year	Remarks
1950-1960	not reported
1961-1963	light infestations in Wicksteed and McMillan twps

(cont'd)

Jack Pine Resin Midge, *Cecidomyia resinicola* (O.S.)
(= *reeksi* Vock.)

Host (s): jP

[Minor]

Year	Remarks
1964-1965	decline in infestations in Wicksteed and McMillan twps
1966	light infestations in Wicksteed, McMillan, and Rogers twps
1967-1980	not reported

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson

Host (s): jP

[Minor]

Year	Remarks
1950-1960	not reported
1961-1962	low populations in Wicksteed Twp
1963-1977	not reported
1978	low populations in Wicksteed Twp
1979-1980	not reported

Fringed Birch Sawfly, *Dimorphopteryx melanognathus* Roh.

Host (s): birch

[Major]

Year	Remarks
1950-1961	not reported
1962	first distribution record in the District
1963	Low populations persisted in the District.
1964-1980	not reported

Spruce Coneworm, *Dioryctria reniculelloides* Mut. & Mun.

Host (s): spruce, bF

[Minor]

Year	Remarks
1950-1965	not reported
1966-1967	low numbers in the District
1968-1979	not reported
1980	In Arnott Twp 39% of the cones examined were infested.
1980	not reported

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host (s): wB

[Major]

Year	Remarks
1950-1974	not reported
1975	first distribution record in McCoig Twp
1976-1977	not reported
1978	severe browning in Larkin Twp
1979	severe browning in Gourlay Twp
1980	not reported

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.)

Host (s): spruce

[Minor]

Year	Remarks
1950-1960	not reported
1961	first distribution record in Gill Twp
1962-1964	low populations in the District
1965	increased populations in the District

(cont'd)

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.) (concl.)

Host (s): spruce [Minor]

Year	Remarks
1966	light defoliation in Gill Twp
1967-1969	not reported
1970	first record in Frost and Gourlay twps
1971-1980	not reported

Pine Engraver, *Ips pini* (Say)

Host (s): coniferous [Major]

Year	Remarks
1950-1961	not reported
1962	high numbers in a large area of blowdown
1963-1969	not reported
1970	low levels in the District
1971	continued low levels in the District
1972-1980	not reported

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host (s): bF, wS, bS [Major]

Year	Remarks
1950-1952	not reported
1953-1954	low populations in the District
1955	light defoliation in Cholette Twp
1956-1957	low populations in the District
1958-1959	not reported

(cont'd)

Balsam Fir Sawfly, *Neodiprion abietis* complex (concl.)

Year	Remarks
1960-1961	light defoliation on white spruce in Frost and Gill twps
1962-1964	low populations in the District
1965	increase in populations in Rogers Twp
1966-1968	low populations in the District
1969-1974	not reported
1975	light defoliation on balsam fir in Lowther Twp
1976-1978	not reported
1979	severe single-tree defoliation in Kohler and McCoig twps
1980	not reported

Balsam Poplar Leafblotch Miner, *Phyllonorycter nipigon* (Free.)

Host (s): bPo [Major]

Year	Remarks
1950-1970	not reported
1971	severe defoliation of young trees in Shuel Twp
1972	continued severe defoliation of young trees in Shuel Twp
1973	continued severe defoliation in Shuel Twp
1974-1976	not reported
1977	severe browning between Hearst and Pagwa
1978	Populations declined.
1979	high populations in McMillan Twp
1980	not reported

Balsam Shootboring Sawfly, *Pleroneura brunneicornis* Roh.

Host (s): bF [Minor]

Year	Remarks
1950-1959	not reported
1960	light infestation in Frost Twp
1961	not reported
1962	light infestations general in the District
1963	not reported
1964	increase in populations in Byng Twp
1965-1966	low populations general in the District
1967	not reported
1968	low populations in the District
1969-1980	not reported

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Host (s): wS, bS [Minor]

Year	Remarks
1950-1959	not reported
1960	common in all stands examined in Devitt Twp
1961-1963	low populations in McMillan Twp
1964	decline in populations in McMillan Twp
1965	low populations general in the District
1966	increase in populations in McMillan Twp
1967	low populations in McMillan Twp
1968	slight increase in populations in McMillan Twp
1969-1970	not reported
1971	low populations in McMillan Twp
1972-1980	not reported

Pine Tip Moth, *Rhyacionia adana* Heinr.

Host (s): pine [Major]

Year	Remarks
1950-1959	not reported
1960	first record of distribution in the District
1961-1980	not reported

Red Jack Pine Shoot Borer, *Rhyacionia busckana* Heinr.

Host (s): jP [Minor]

Year	Remarks
1950-1961	not reported
1962	low populations in McMillan Twp
1963-1980	not reported

Aspen Webworm, *Tetralopha aplastella* (Hlst.)

Host (s): aspen, birch [Minor]

Year	Remarks
1950-1961	not reported
1962	high populations in McMillan and Stoddart twps
1963	increased populations in Byng Twp
1964	a further increase in Byng Twp
1965-1980	not reported

Spruce Bud Moth, *Zeiraphera canadensis* Mut. & Free.

Host (s): spruce

[Major]

Year	Remarks
1950-1969	not reported
1970	severe defoliation in McMillan and Arnott twps
1971	high populations in McMillan and Arnott twps
1972-1980	not reported

Poplar Blackmine Beetle, *Zeugophora abnormis* Lec.

Host (s): poplar

[Minor]

Year	Remarks
1950-1954	not reported
1955-1959	common on young trees in the District
1960	17% of the leaves of young trees mined in Kohler Twp
1961	light mining in Kohler and Wicksteed twps
1962-1980	not reported

DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl : Fr.) Kummer

Host (s): all species

[Major]

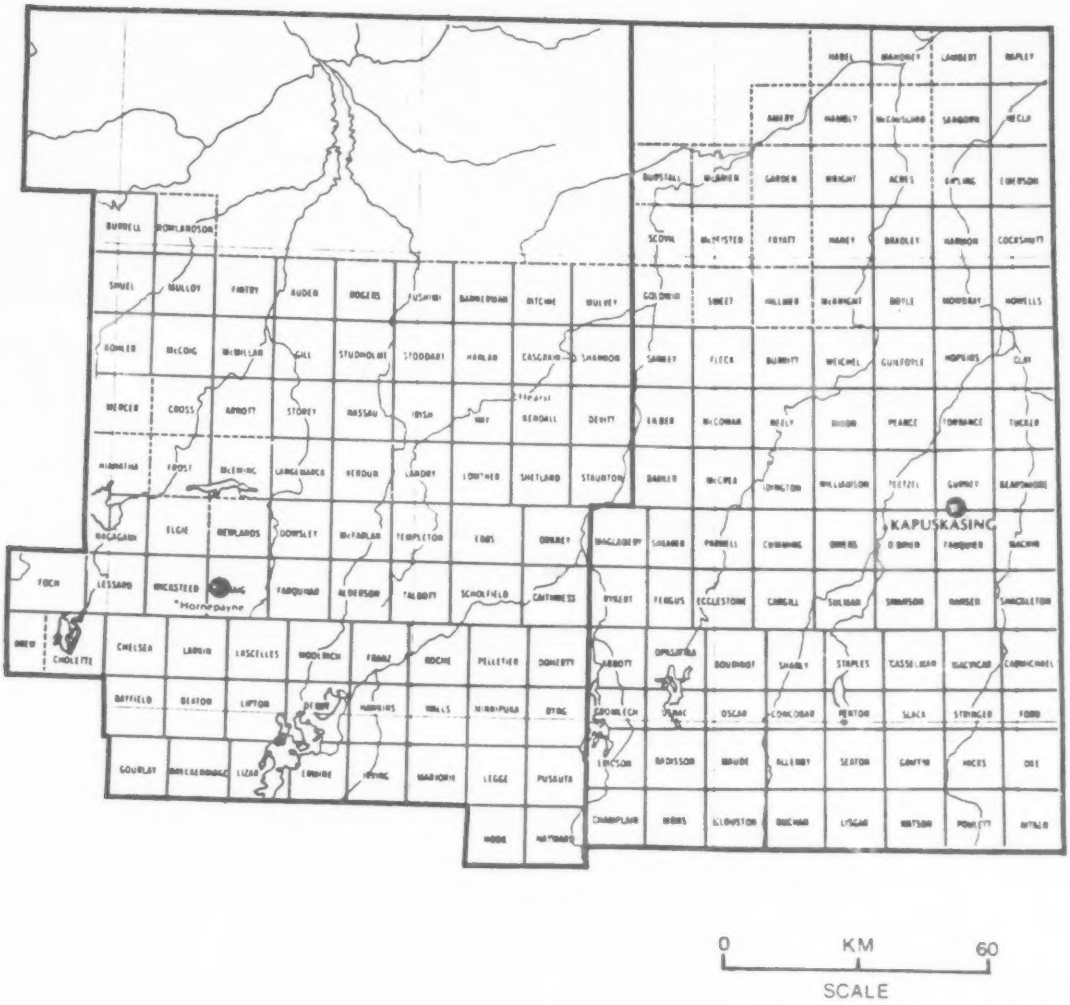
Year	Remarks
1950-1961	not reported
1962	light damage on larch in Kohler Twp
1963	light damage on jack pine in Gill Twp
1964-1967	not reported
1968	trace damage in the District
1969	not reported
1970	common in black spruce plantations
1971-1973	not reported
1974-1978	light damage in pine plantations in the District
1979	light damage in pine plantations in Studholme Twp
1980	not reported

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard

Host (s): pine [Major]

Year	Remarks
1950-1966	not reported
1967	moderate damage to red pine and jack pine plantation trees in Haig Twp (see map, page 85)
1968	heavy damage in red pine plantations in Wicksteed Twp; moderate damage in jack pine plantations in Wicksteed Twp
1969	not reported
1970	trace levels in Studholme and Wicksteed twps
1971	moderate-to-heavy damage in Wicksteed, and Studholme twps
1972-1975	low level of infection in Gill, Wicksteed, and Studholme twps
1976-1978	not reported
1979-1980	light levels in Arnott and Studholme twps

HEARST AND KAPUSKASING DISTRICTS


KAPUSKASING
Hearst
Hornepayne
0
KM
60
SCALE

SCLERODERRIS CANKER

Locations where infections were observed in 1967

LEGEND

Several records ●

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and *C. ledicola* Lagh.

Host (s): spruce

[Minor]

Year	Remarks
1950-1953	not reported
1954-1958	light infections common in the District
1959	severe browning in the Hearst, Hornepayne and Pagwa areas
1960	decline in incidence in the Hearst, Hornepayne and Pagwa areas
1961	decline to low in the District
1962-1963	low incidence in the District
1964-1965	light to moderate in McMillan Twp
1966	reduced to low levels in the District
1967-1969	Low levels persisted in the District.
1970-1971	not reported
1972	moderate browning in Caithness Twp
1973	not reported
1974	varying degrees of infection in Scholfield Twp
1975-1977	generally light infections in the District
1978	light browning in Lowther Twp
1979-1980	low levels in the District

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver

Host (s): aspen

[Major]

Year	Remarks
1950-1958	not reported
1959	moderate-to-severe along Hwy 11 between Hearst and the Geraldton-Hearst district boundary
1960-1962	not reported
1963	an increase in incidence and severity in the District
1964	a decrease in levels throughout the District
1965	moderate-to-severe in the District
1966	a general decline throughout the District
1967	a further decline
1968	low levels throughout the District
1969	not reported
1970	severe infection in McMillan, Gill, and Studholme twps
1971	decline to light in McMillan, Gill, and Studholme twps
1972	a further decline
1973	light infection in Wicksteed Twp
1974-1975	light infection general in the District
1976-1977	not reported
1978	severe infection in Bayfield and Lascelles twps; light infection in Lowther, Larkin, and Beaton twps
1979	severe infection in Gourlay Twp; light infection in Studholme and Beaton twps
1980	low levels general in the District

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx

Host (s): aspen [Major]

Year	Remarks
1950-1961	not reported
1962	severe stem damage in Casgrain and Studholme twps
1963	as much as 90% mortality in terminal shoots at numerous locations in the District
1964	severe damage general in the District
1965-1966	not reported
1967-1968	light infection in Nassau Twp
1969	not reported
1970	common in the District
1971-1972	not reported
1973	trace levels in the District
1974-1975	not reported
1976	severe damage in Kohler and McCoig twps
1977-1979	light in Arnott and Gourlay twps
1980	not reported

Other Noteworthy Diseases

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur

Host (s): jP [Major]

Year	Remarks
1950-1968	not reported
1969	trace damage in Haig Twp
1970-1980	not reported

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer

Host (s): wP

[Major]

Year	Remarks
1950-1961	not reported
1962	low levels of infection in Haig Twp
1963-1966	not reported
1967	light infection in Devitt and Studholme twps
1968	severe infection in Studholme Twp
1969-1972	not reported
1973	moderate infection in Studholme Twp
1974-1980	not reported

Tar Spot Needle Cast, *Davisomycella ampla* (J. Davis) Darker

Host (s): jP

[Major]

Year	Remarks
1950-1959	not reported
1960-1964	light in the District
1965-1975	not reported
1976-1977	trace levels of infection in the District
1978	not reported
1979-1980	trace levels of infection in Arnott and Studholme twps

Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats.

Host (s): jP [Major]

Year	Remarks
1950-1969	not reported
1970	trace infection levels in the District
1971-1973	not reported
1974	trace infection levels in the District
1975-1979	not reported
1980	low levels of infection in the District

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller

Host (s): poplar [Major]

Year	Remarks
1950-1953	not reported
1954	widely distributed
1955	low levels common in the District; 12% infected in Kendall Twp
1956-1959	not reported
1960-1980	varying degrees of damage throughout the District

ABIOTIC DAMAGE

Frost

Year	Remarks
1950-1964	not reported
1965	damage heavy on white and black spruce
1966-1967	not reported
1968	severe damage in the central and northern parts of the District
1969-1976	not reported
1977	varying degrees of intensity in the District
1978-1979	not reported
1980	Light-to-moderate damage in the Hearst area was attributed to frost and snow.

Wind

Year	Remarks
1950-1968	not reported
1969	severe blowdown in a band 16 km wide between Nagagami and the Kapuskasing District border
1970-1972	not reported
1973	severe blowdown in the northern part of the District
1974-1980	not reported

Hail

Year	Remarks
1950-1977	not reported
1978	severe branch damage in cut-over area in Studholme, Stoddart, Irish, Way and Shetland twps
1979-1980	not reported

APPENDIX A

DECIDUOUS HOST

Common Name	Scientific Name	Abbreviations
Alder	*Alnus* spp.	Al
Apple	*Malnus* spp.	Ap
Ash, black	*Fraxinus nigra* Marsh.	As
Aspen, largetooth	*Populus grandidentata* Michx.	lA
trembling	*tremuloides* Michx.	tA
Basswood	*Tilia* spp.	Ba
Beech	*Fagus grandifolia* Ehrh.	Be
Birch, white	*Betula papyrifera* Marsh.	wB
yellow	*alleghaniensis* Britt.	yB
Butternut	*Juglans cinerea* L.	Bu
Cherry, eastern choke	*Prunus virginiana* L.	eaCH
pin	*pensylvanica* L.f.	pCh
Elm, white	*Ulmus americana* L.	wE
Horse-chestnut	*Aesculus hippocastanum* L.	hChe
Ironwood	*Ostrya* spp.	I
Maple, Manitoba	*Acer negundo* L.	mM
red	*rubrum* L.	rM
sugar	*saccharum* Marsh.	sM
Mountain-ash, American	*Sorbus americana* Marsh.	aMo
Oak, bur	*Quercus macrocarpa* Michx.	bO
red	*rubra* L.	rO
Poplar, balsam	*Populus balsamifera* L.	bPo
Carolina	*eugenei* Simon-Louis	cPo
Lombardy	*nigra* L.	lPo
silver	*alba* L.	sPo
Willow	*Salix* spp.	W

APPENDIX B

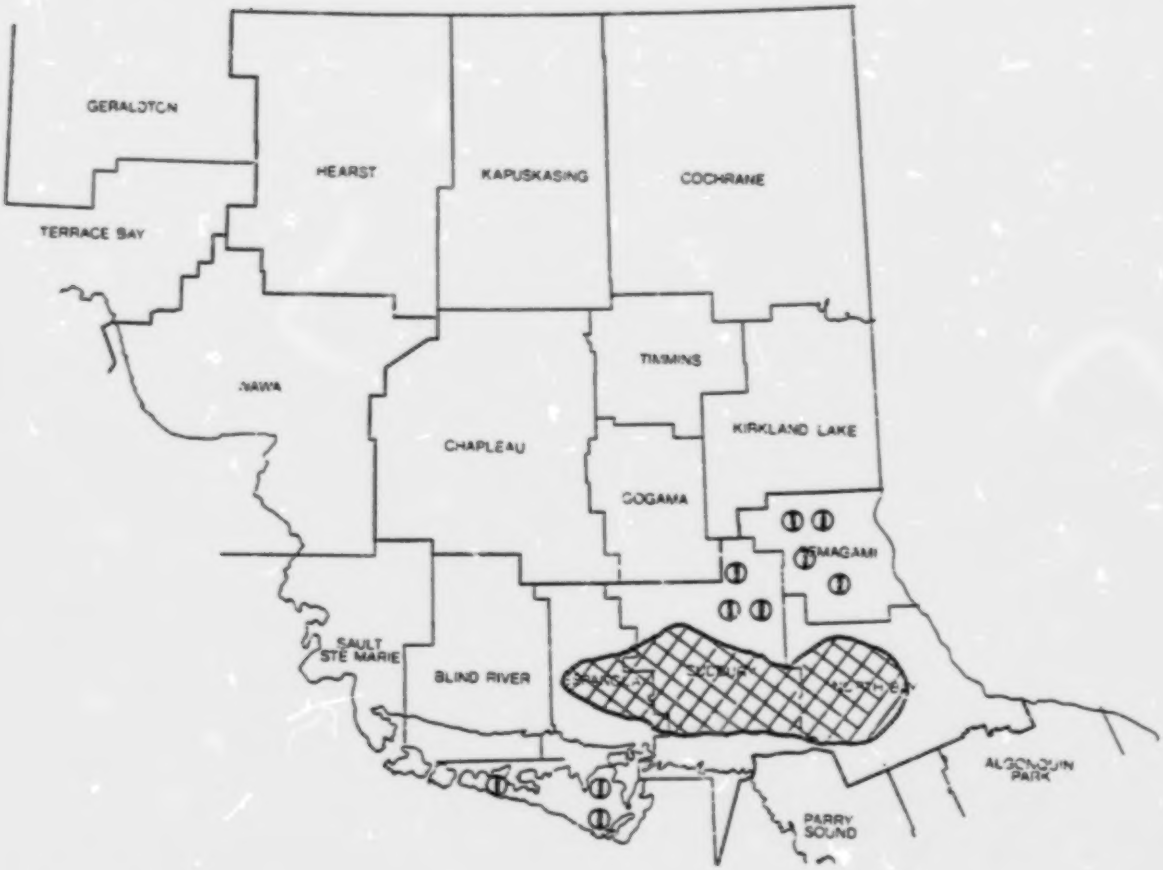
CONIFEROUS HOST

Common Name	Scientific Name	Abbreviations
Cedar, eastern white	*Thuja occidentalis* L.	eC
Fir, balsam	*Abies balsamea* (L.) Mill.	bF
Larch	*Larix laricina* (Du Roi) K. Koch	tL
Pine, Austrian	*Pinus nigra* Arn.	aP
eastern white	*strobus* L.	wP
jack	*banksiana* Lamb.	jP
mugho	*mugho* Turra	mP
red	*resinosa* Ait.	rP
Scots	*sylvestris* L.	scP
Spruce, black	*Picea mariana* (Mill.) B.S.P.	bS
Colorado	*pungens* Engelm.	colS
Norway	*abies* (L.) Karst.	nS
red	*rubens* Sarg.	rS
white	*glauca* (Moench) Voss	wS

APPENDIX C

MAPS - NORTHEASTERN ONTARIO

NORTHEASTERN ONTARIO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GOGAMA
TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Birch Skeletonizer

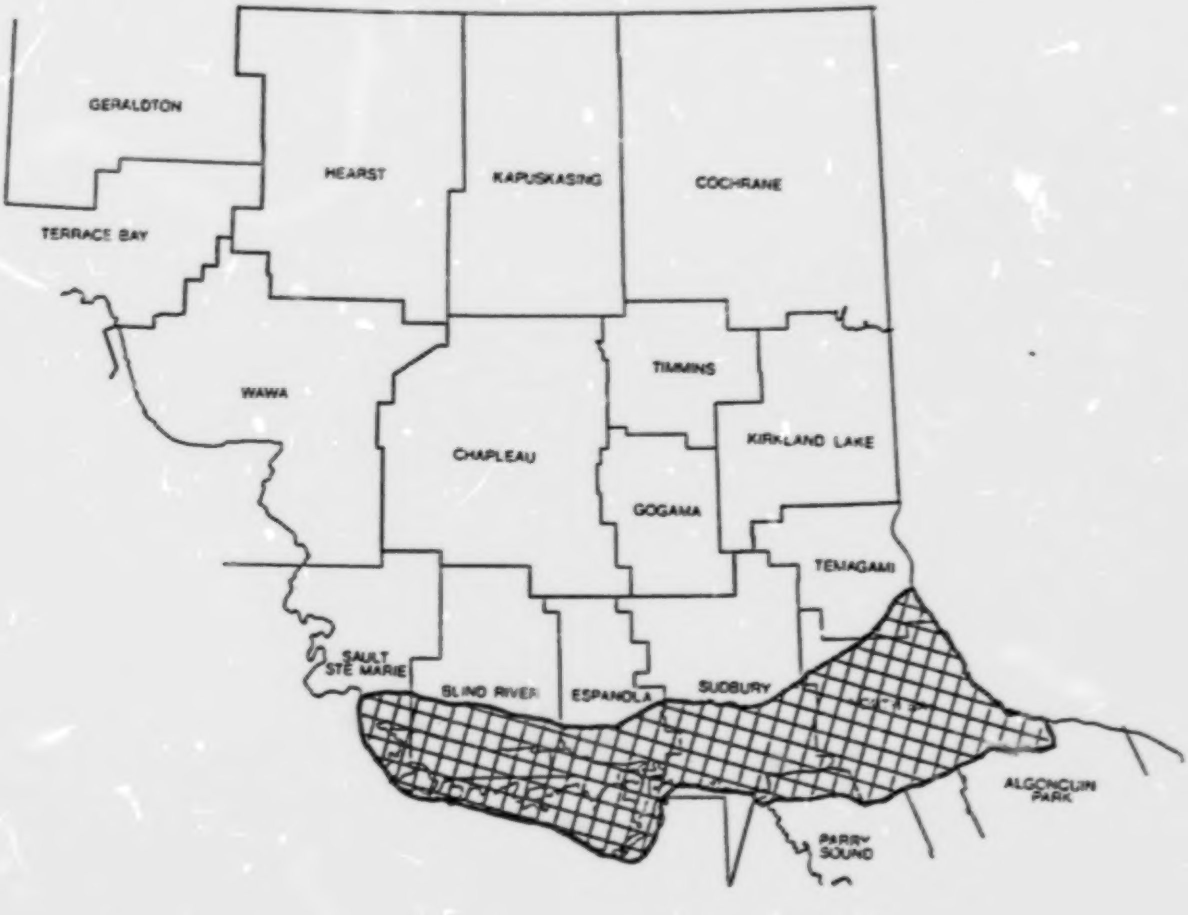
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
ALGONQUIN PARK
PARRY SOUND

Birch Skeletonizer

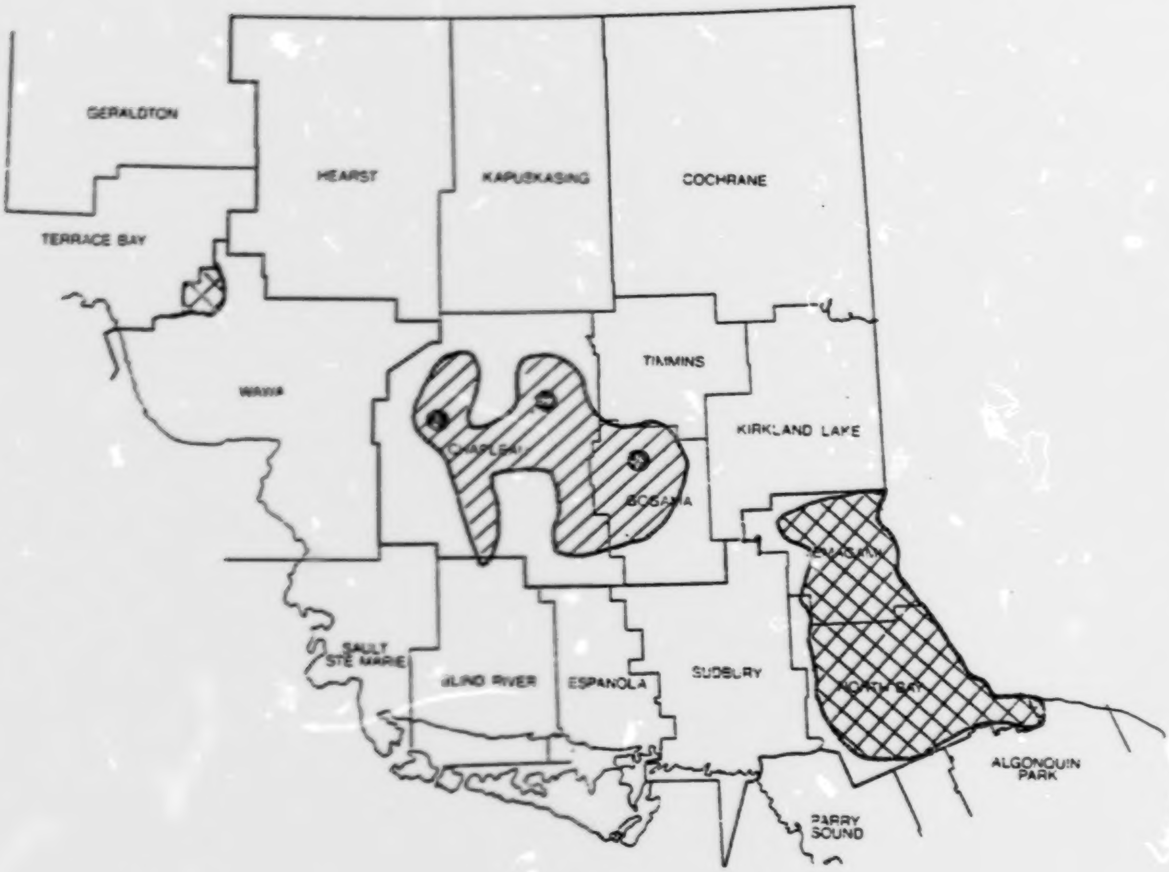
Areas within which defoliation
occurred in 1961

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

Birch Skeletonizer

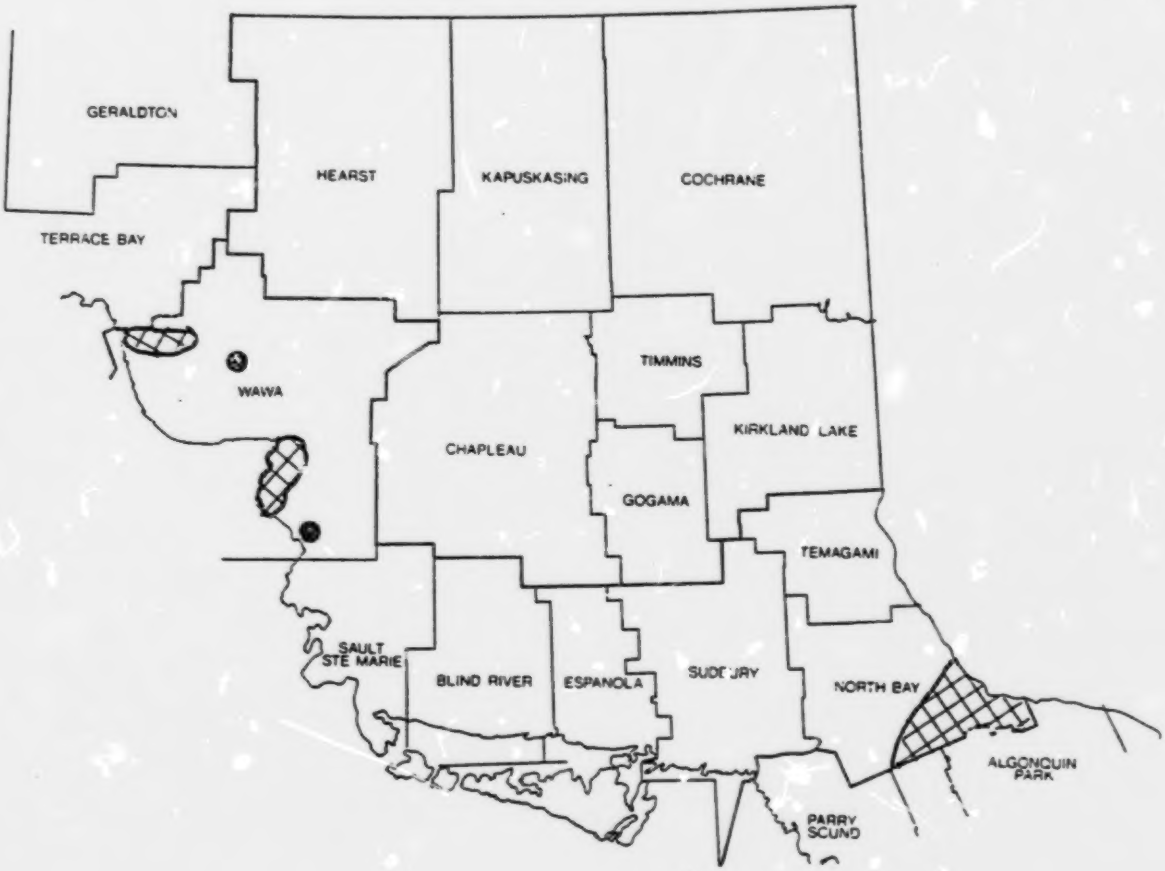
Areas within which defoliation occurred in 1963

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Birch Skeletonizer

0 Miles 60

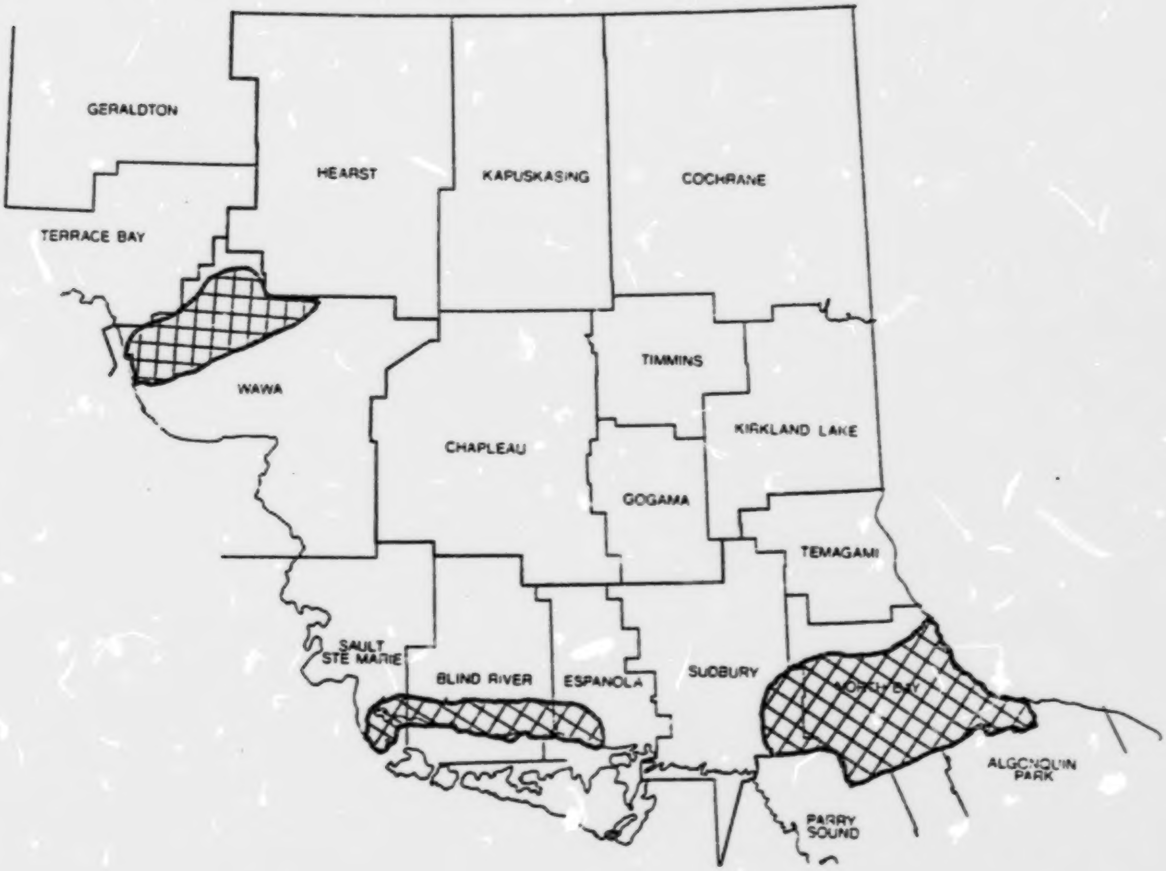
0 Kilometres 96

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Birch Skeletonizer

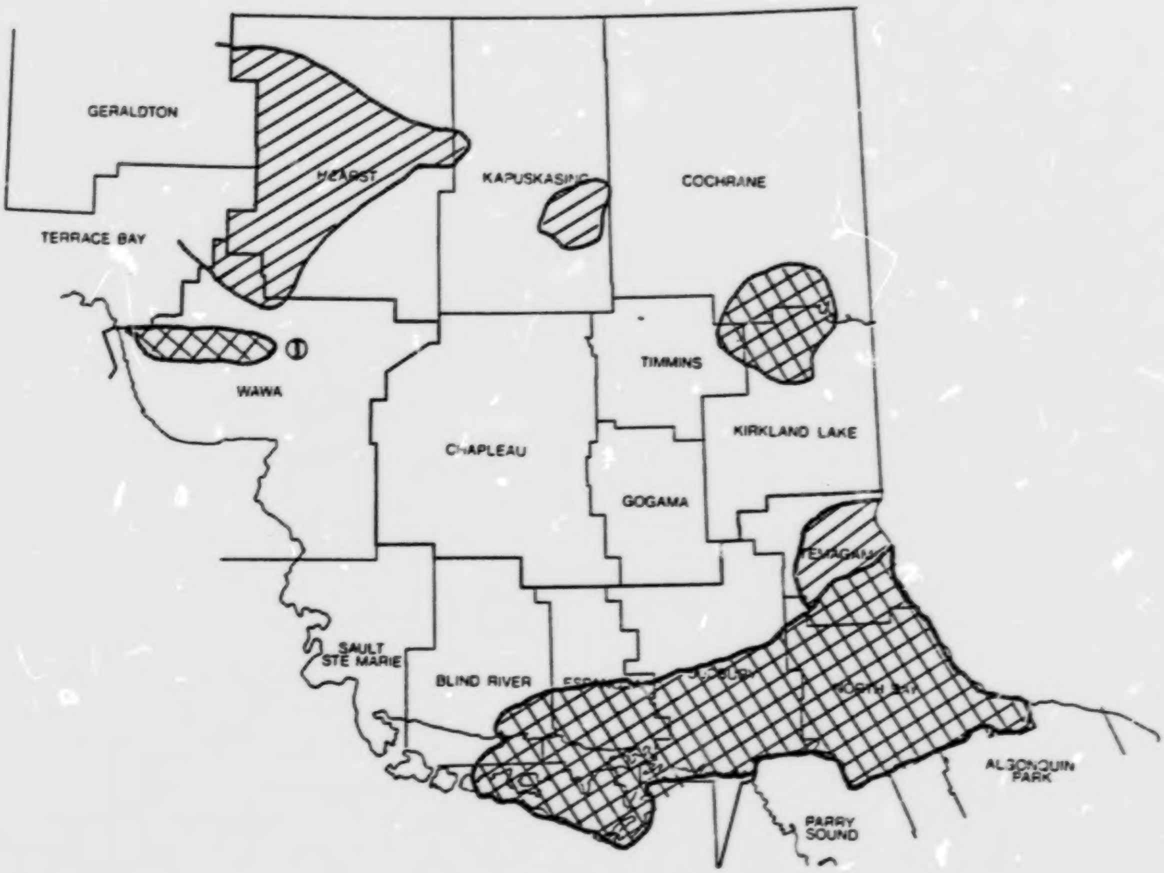
Areas within which defoliation occurred in 1971

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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BLIND RIVER
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NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Birch Skeletonizer

0 Miles 60

0 Kilometres 96

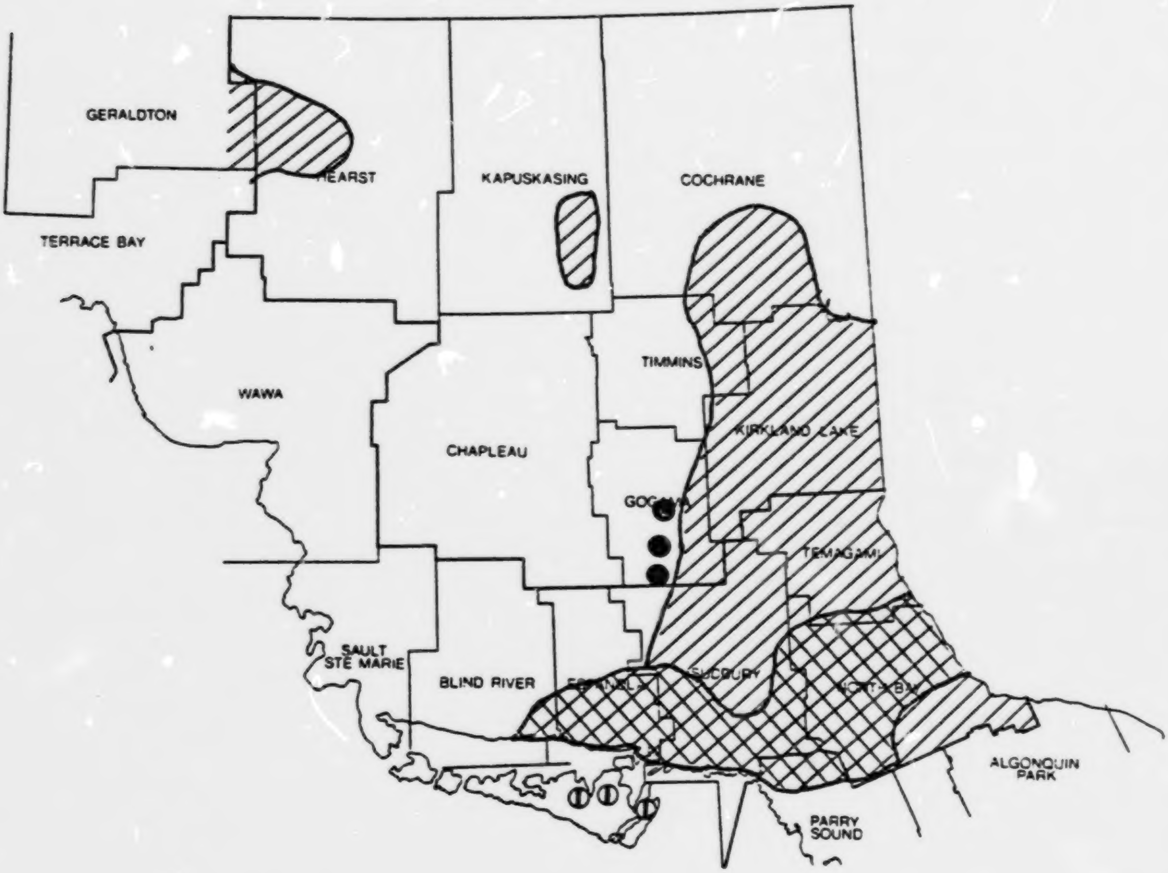
Areas within which defoliation occurred in 1972

LEGEND

Light defoliation Ⓛ or ▨

Moderate-to-severe defoliation ▦

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Birch Skeletonizer

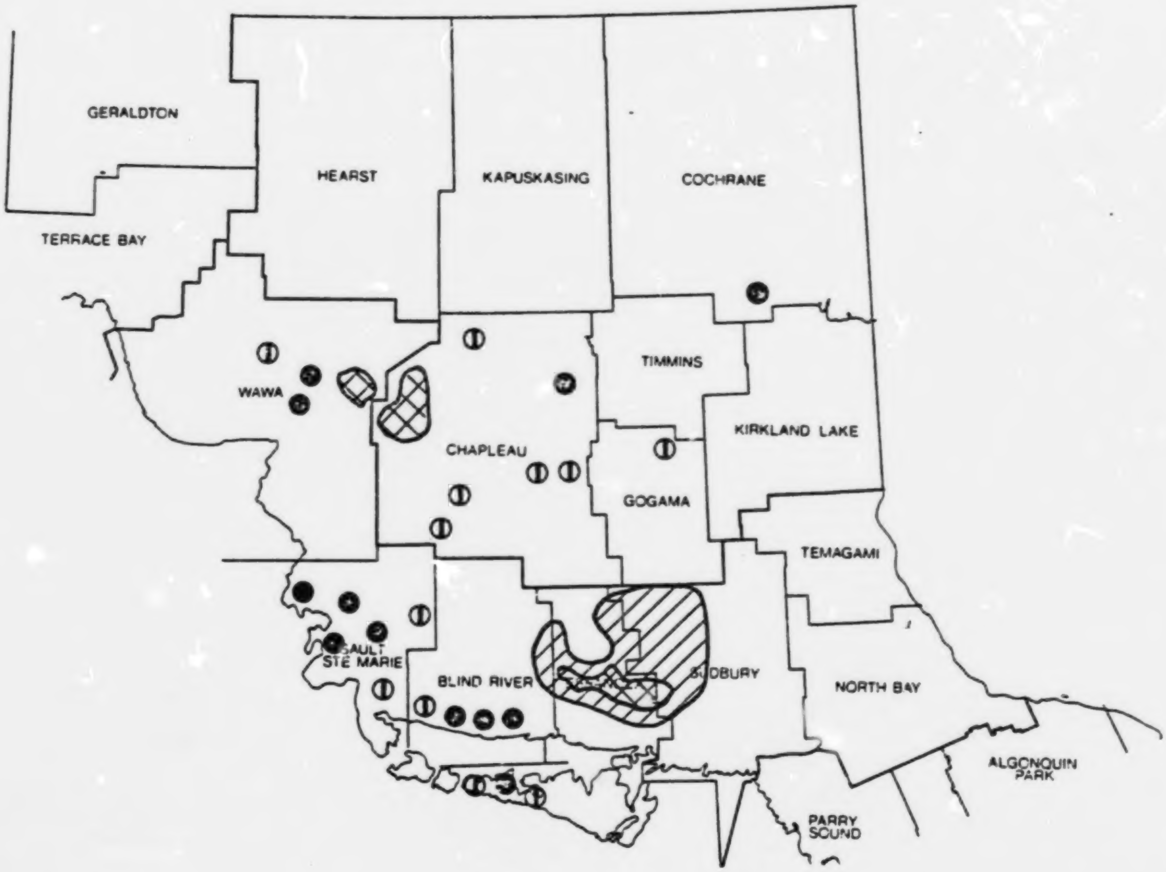
Areas within which defoliation
occurred in 1973

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

Areas within which defoliation occurred in 1957

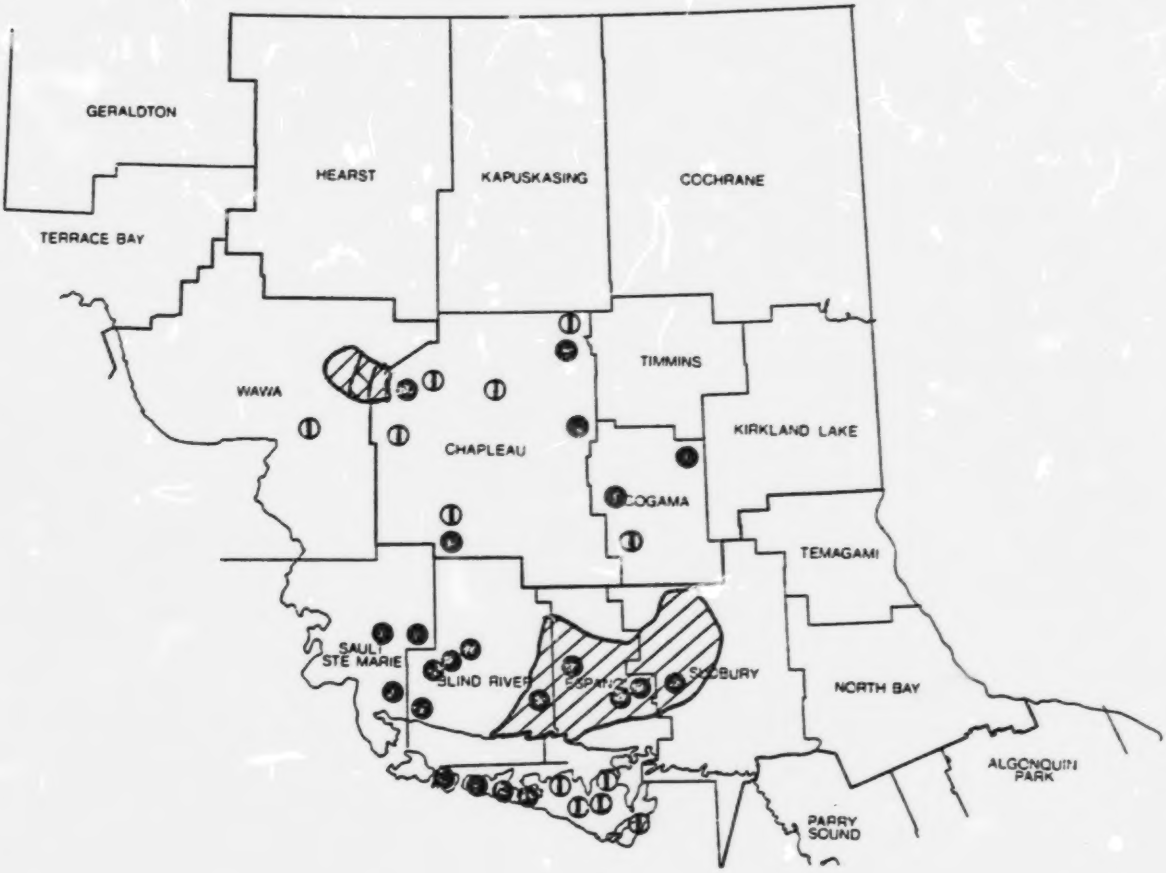
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

Areas within which defoliation occurred in 1958

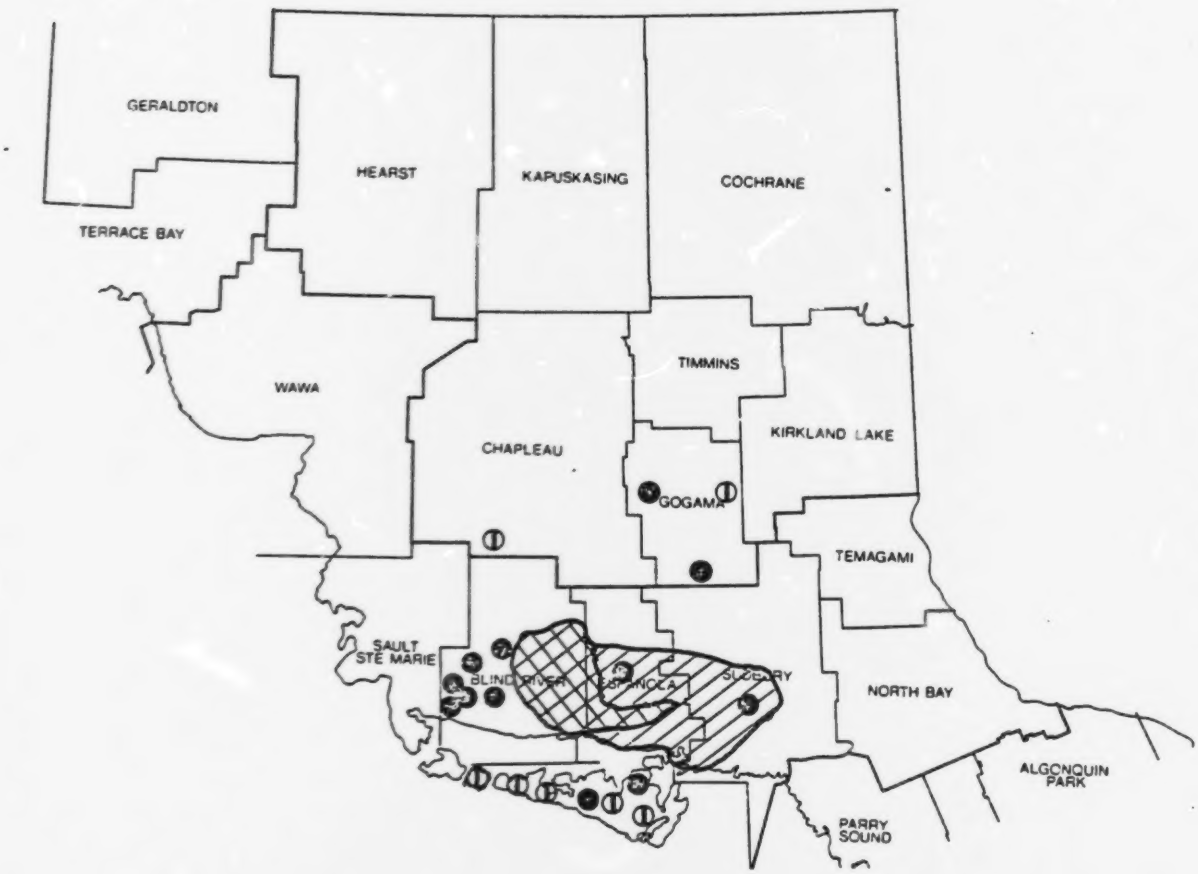
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▦

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

Areas within which defoliation occurred in 1959

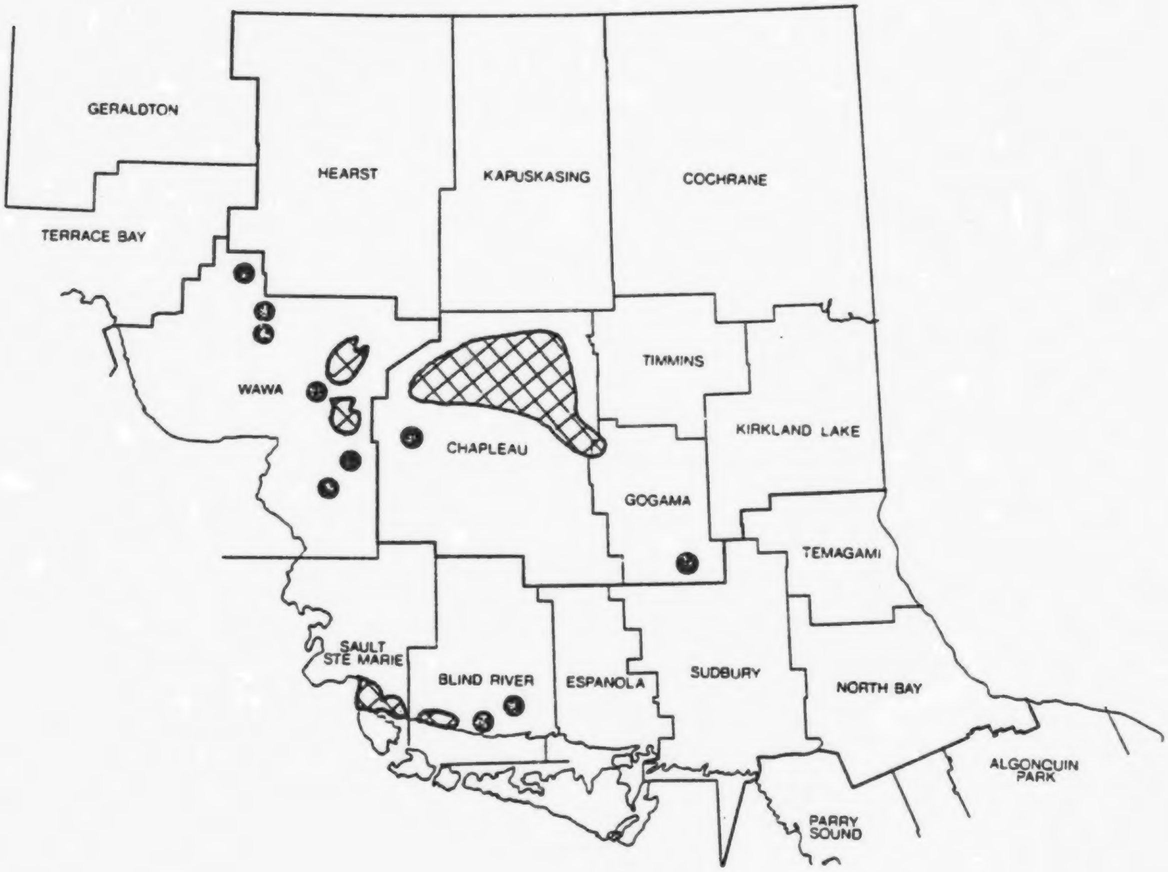
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ⦶ or ▨

Moderate-to-severe defoliation ● or ▦

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60

0 Kilometres 96

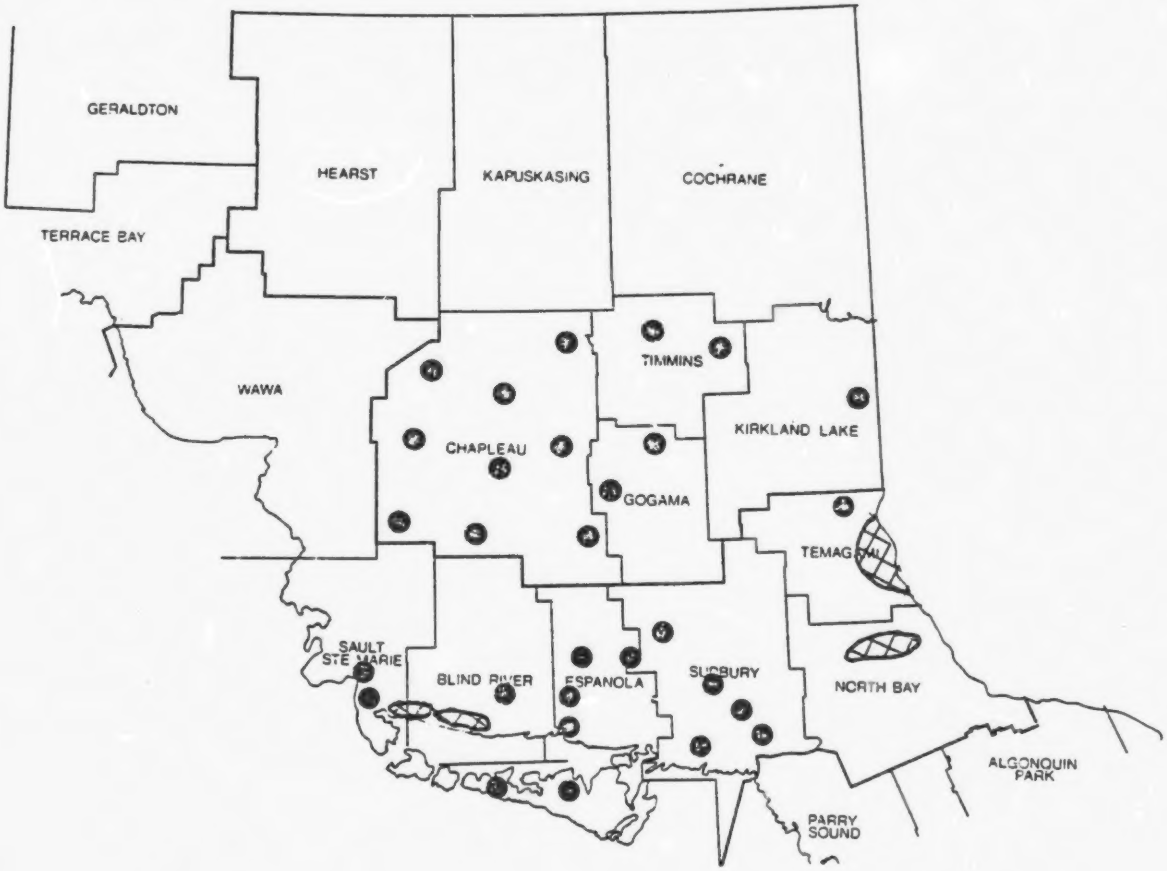
Large Aspen Tortrix

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

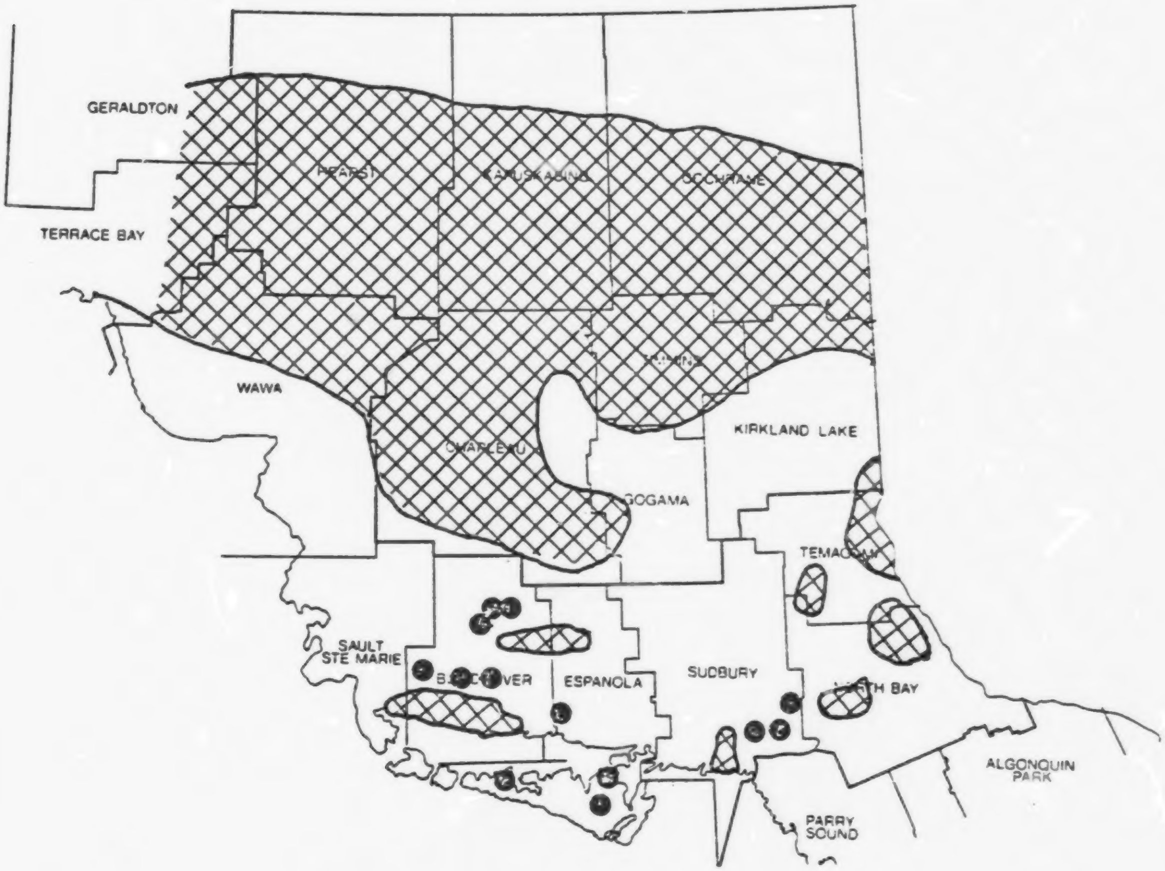
Areas within which defoliation occurred in 1971

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

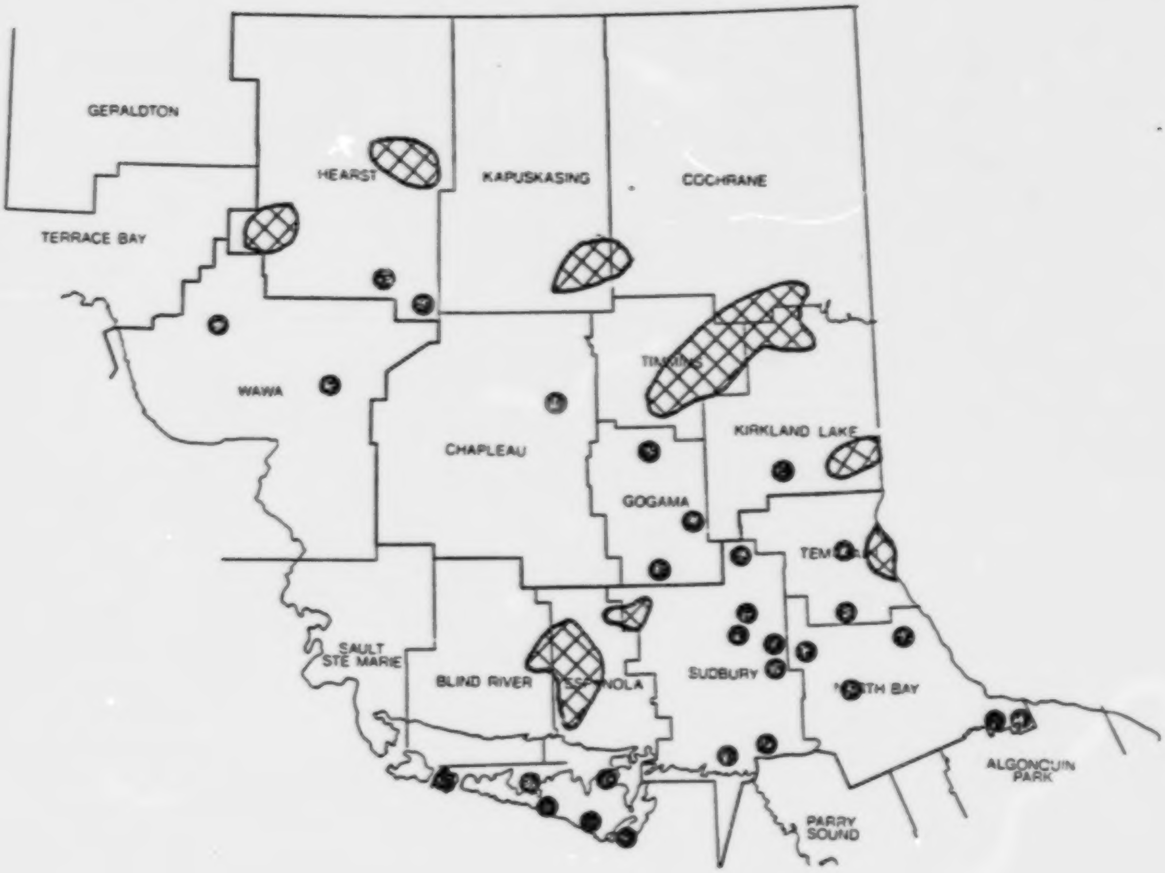
Large Aspen Tortrix

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

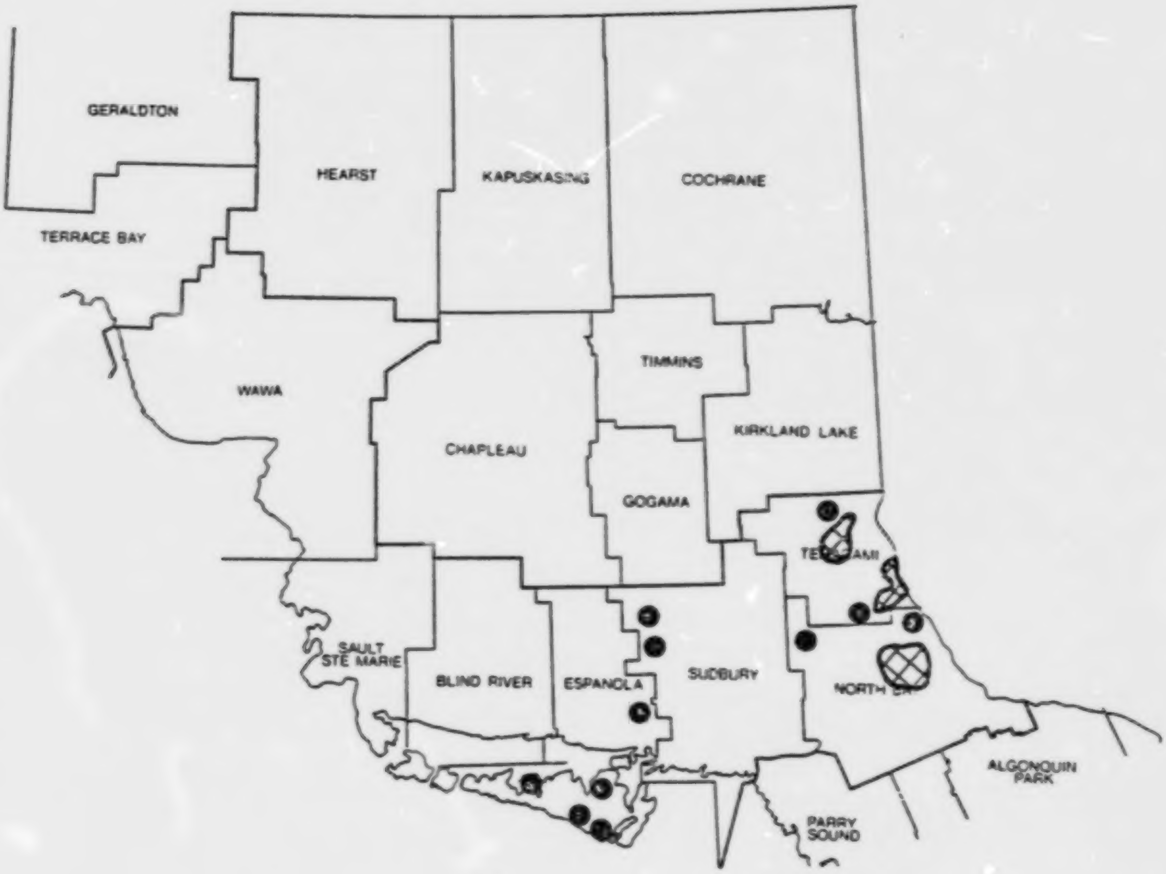
Areas within which defoliation occurred in 1973

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

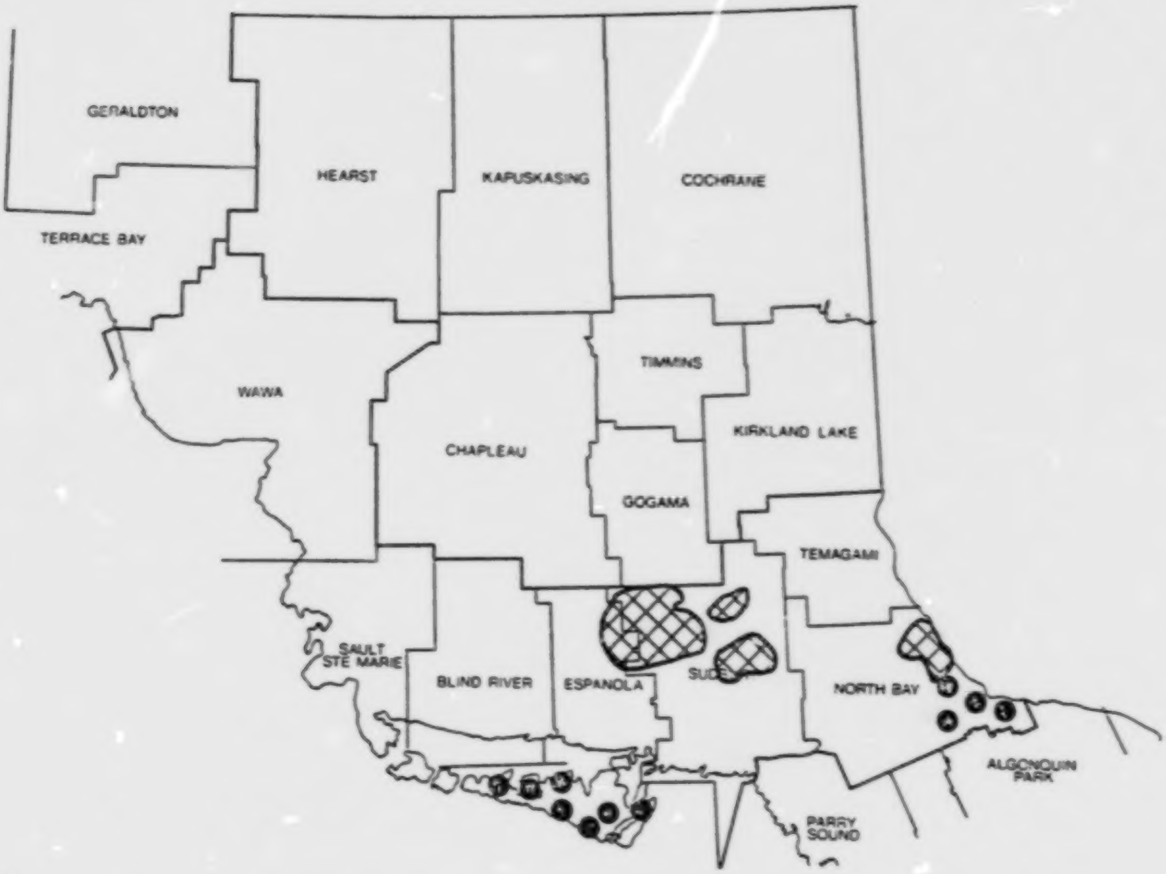
Areas within which defoliation occurred in 1974

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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ALGONQUIN PARK
PARRY SOUND

Large Aspen Tortrix

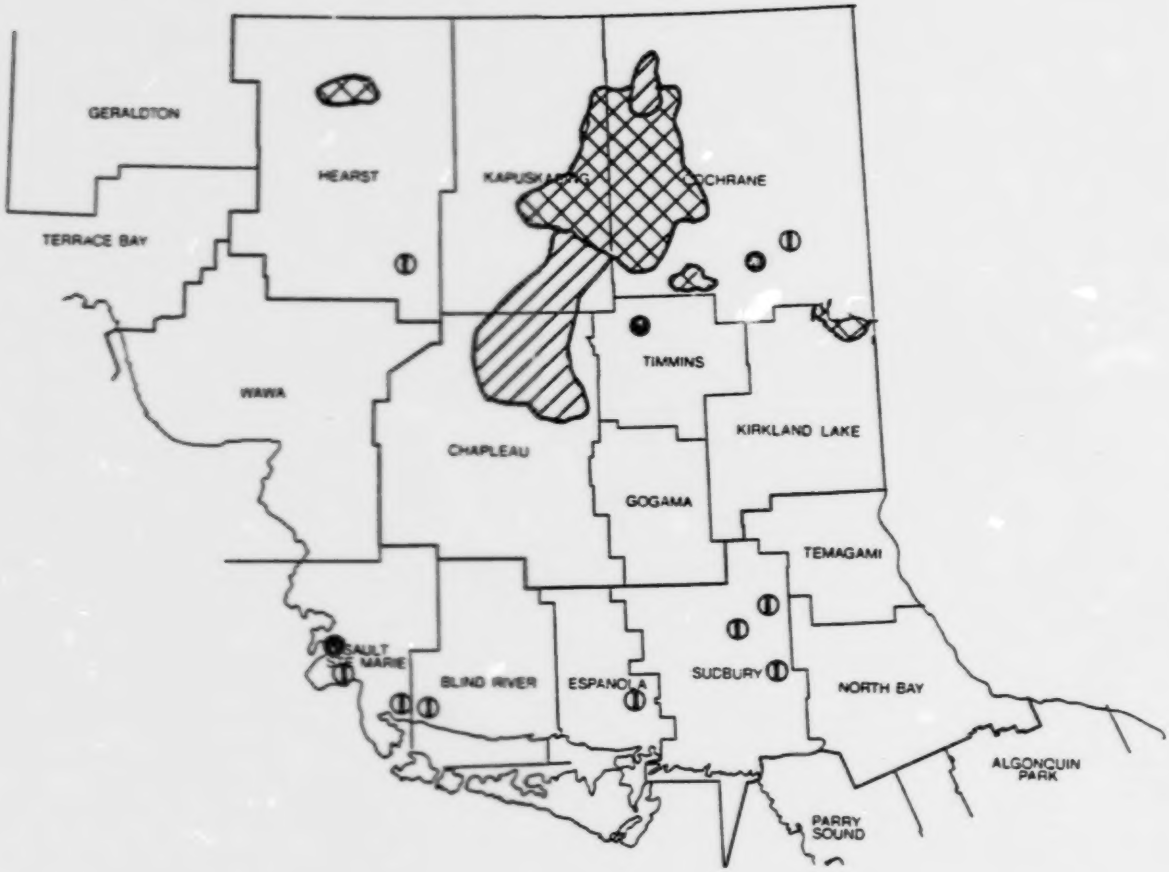
0 Miles 60
0 Kilometres 96

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

Areas within which defoliation
occurred in 1950

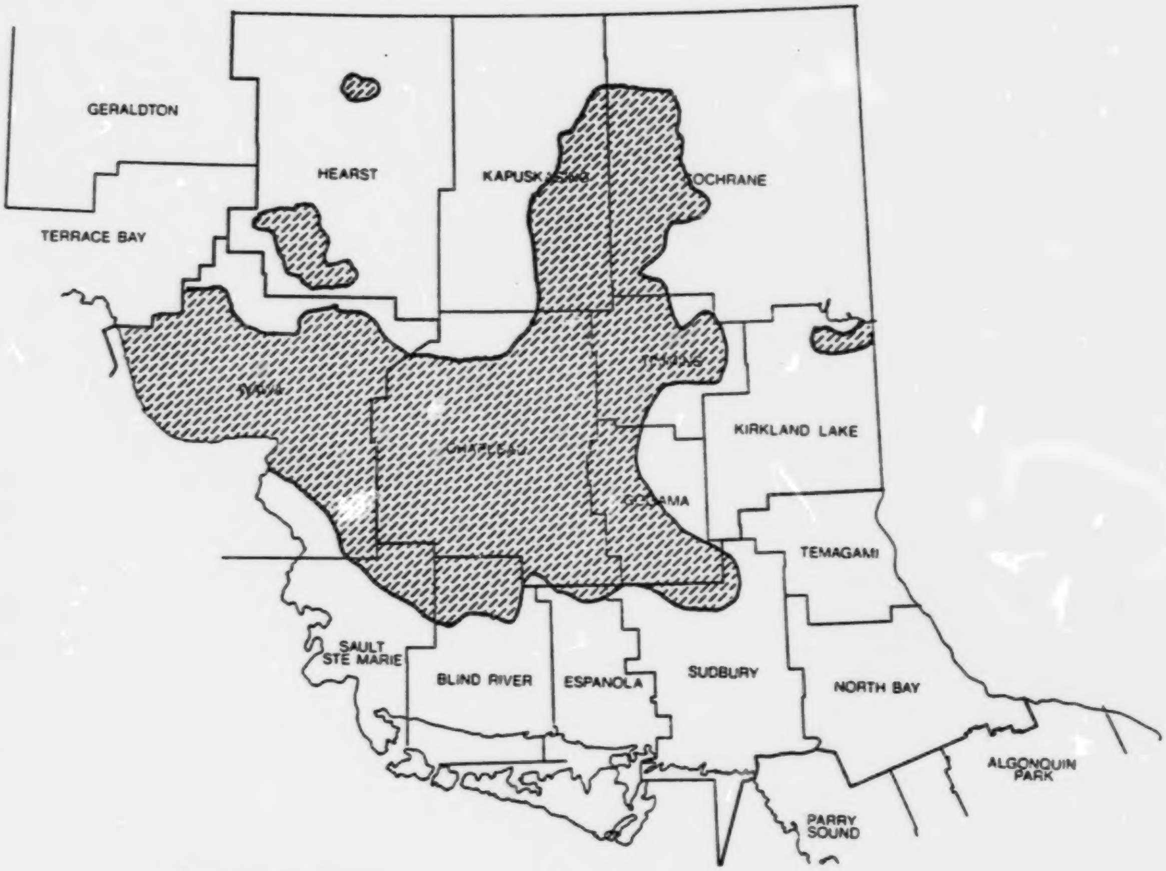
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▦

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

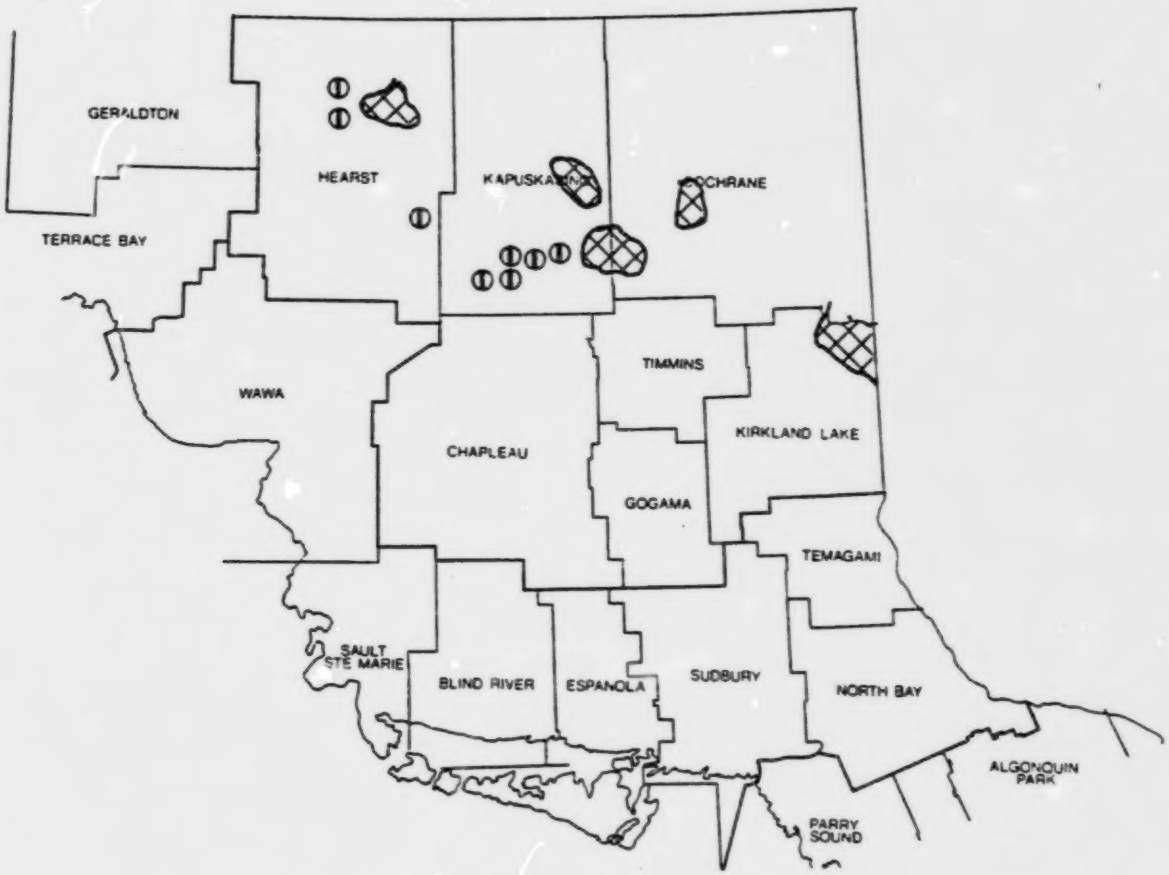
Areas within which balsam fir whole tree and top mortality occurred in 1950

0 Miles 60
0 Kilometres 96

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

Areas within which defoliation occurred in 1951

0 Miles 60

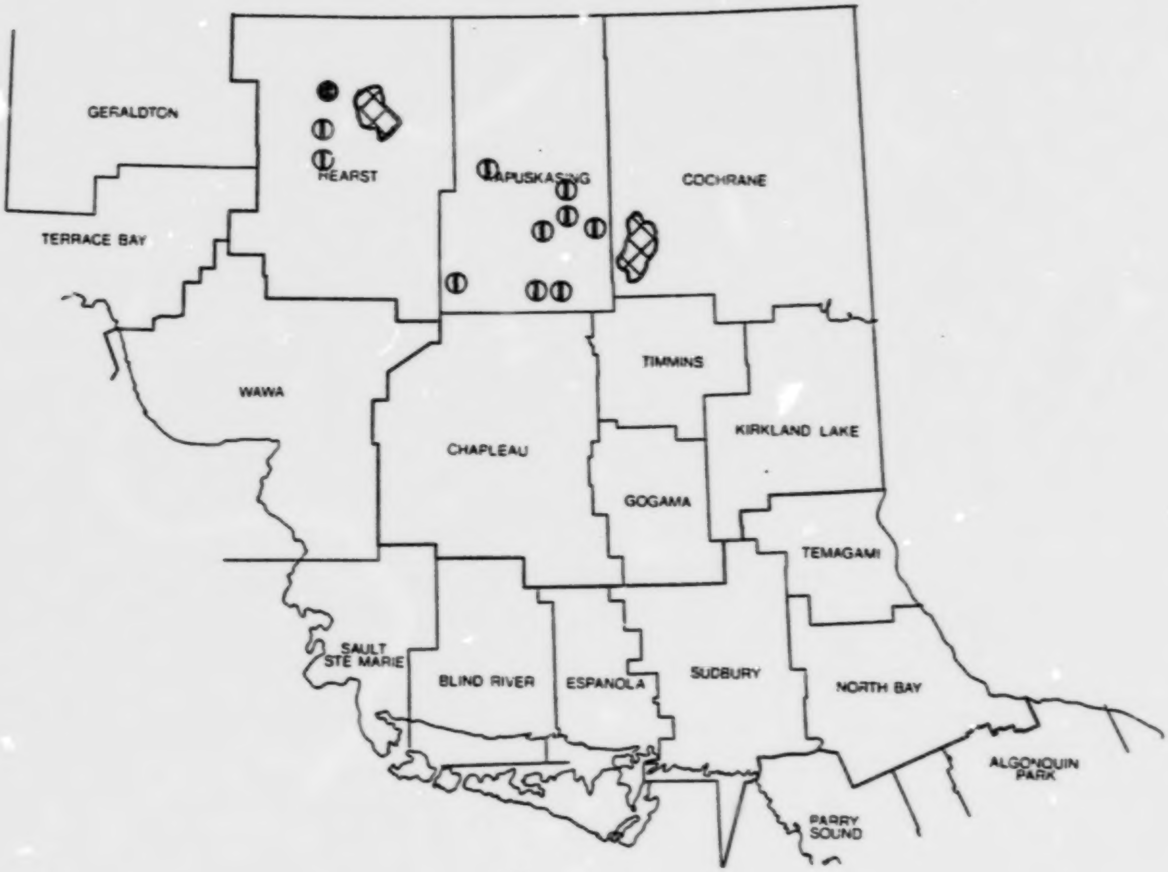
0 Kilometres 96

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Spruce Budworm

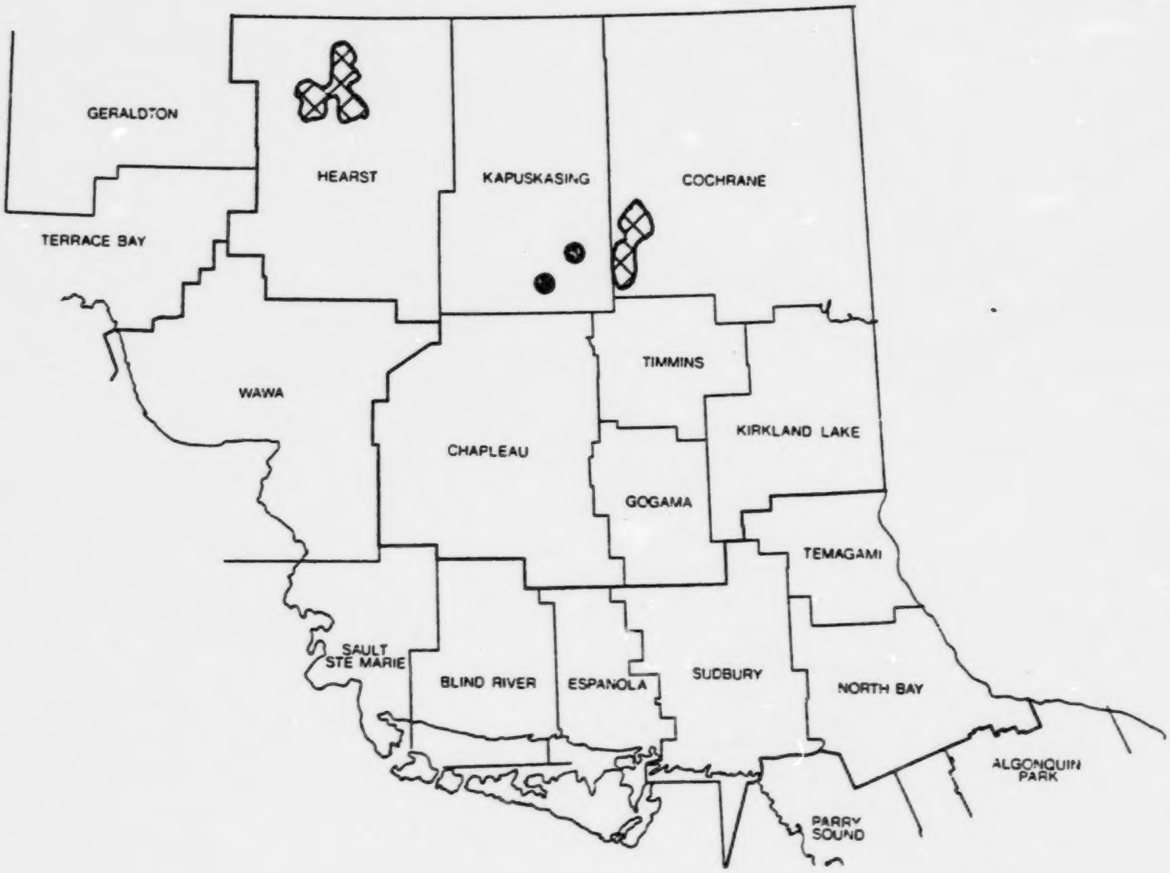
Areas within which defoliation
occurred in 1952

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

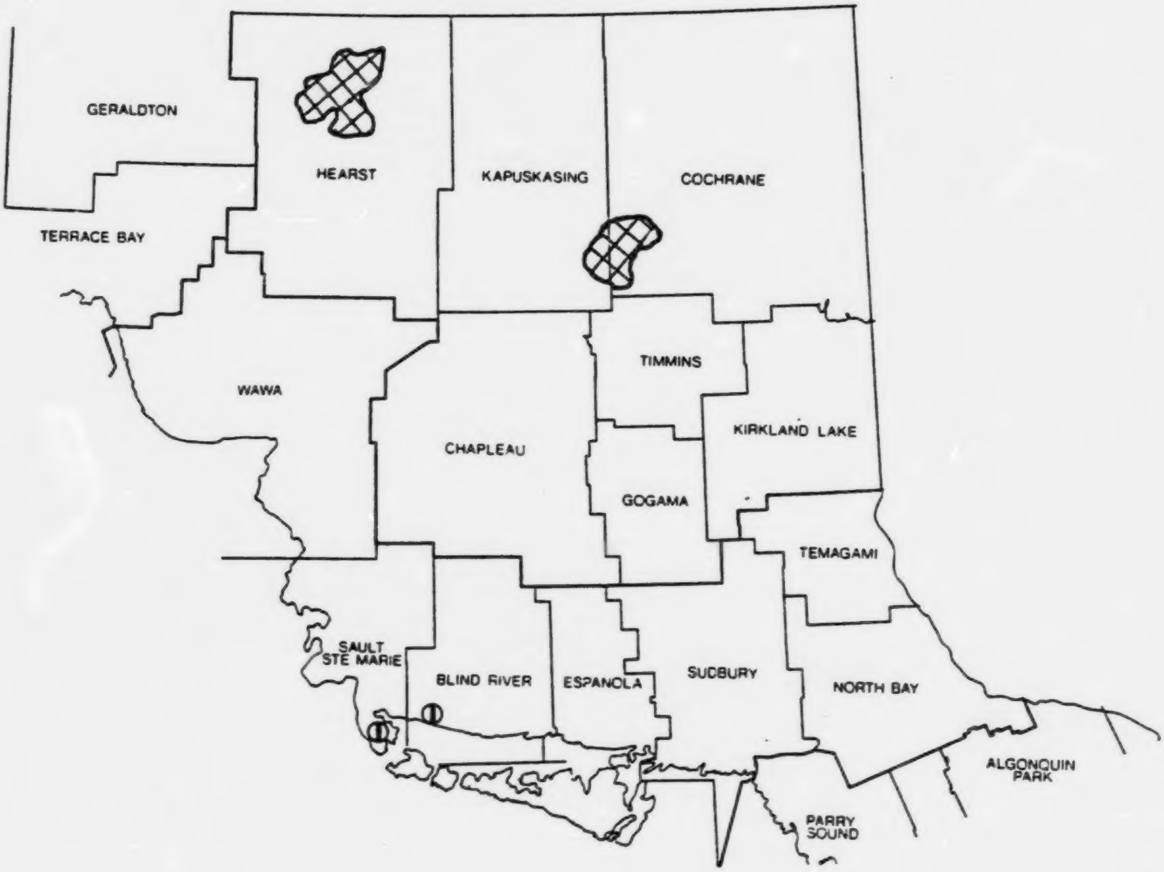
0 Miles 60
0 Kilometres 96

Areas within which defoliation occurred in 1953

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

Areas within which defoliation occurred in 1954

0 Miles 60

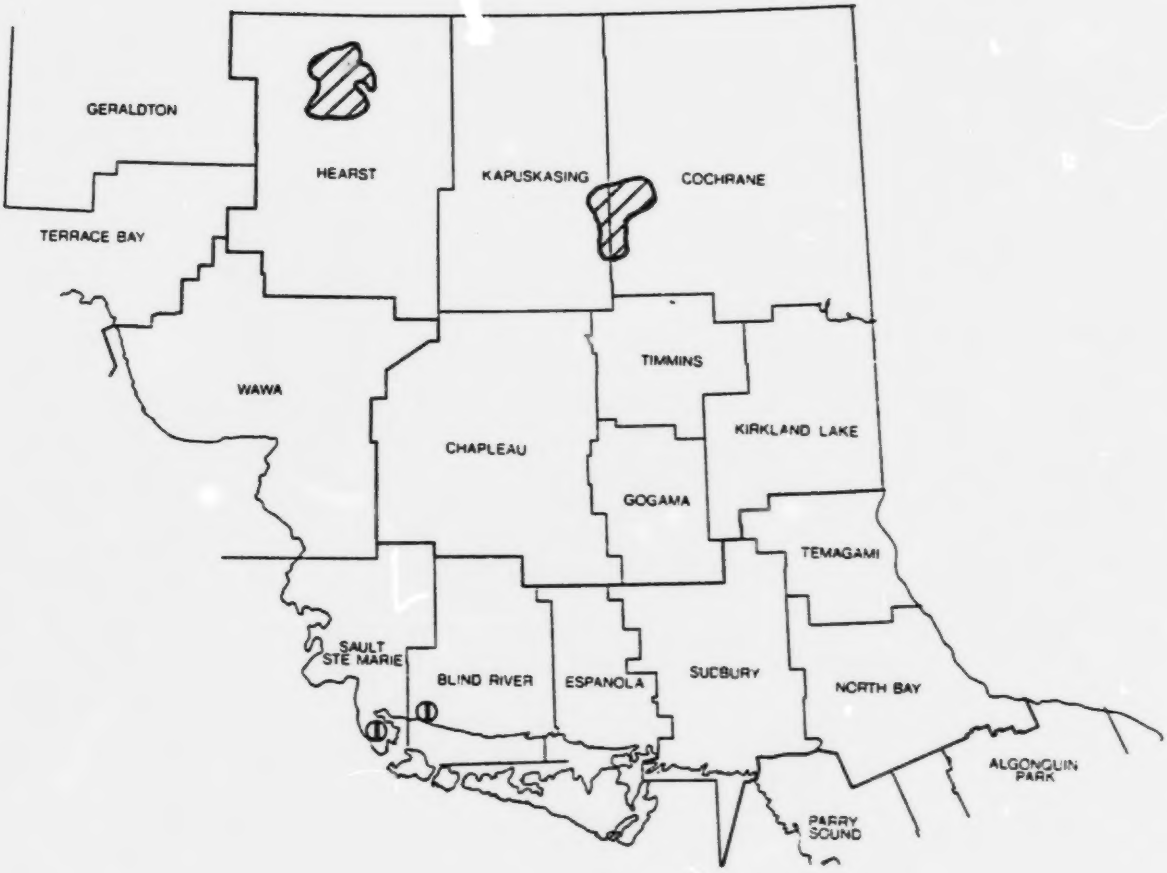
0 Kilometres 96

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

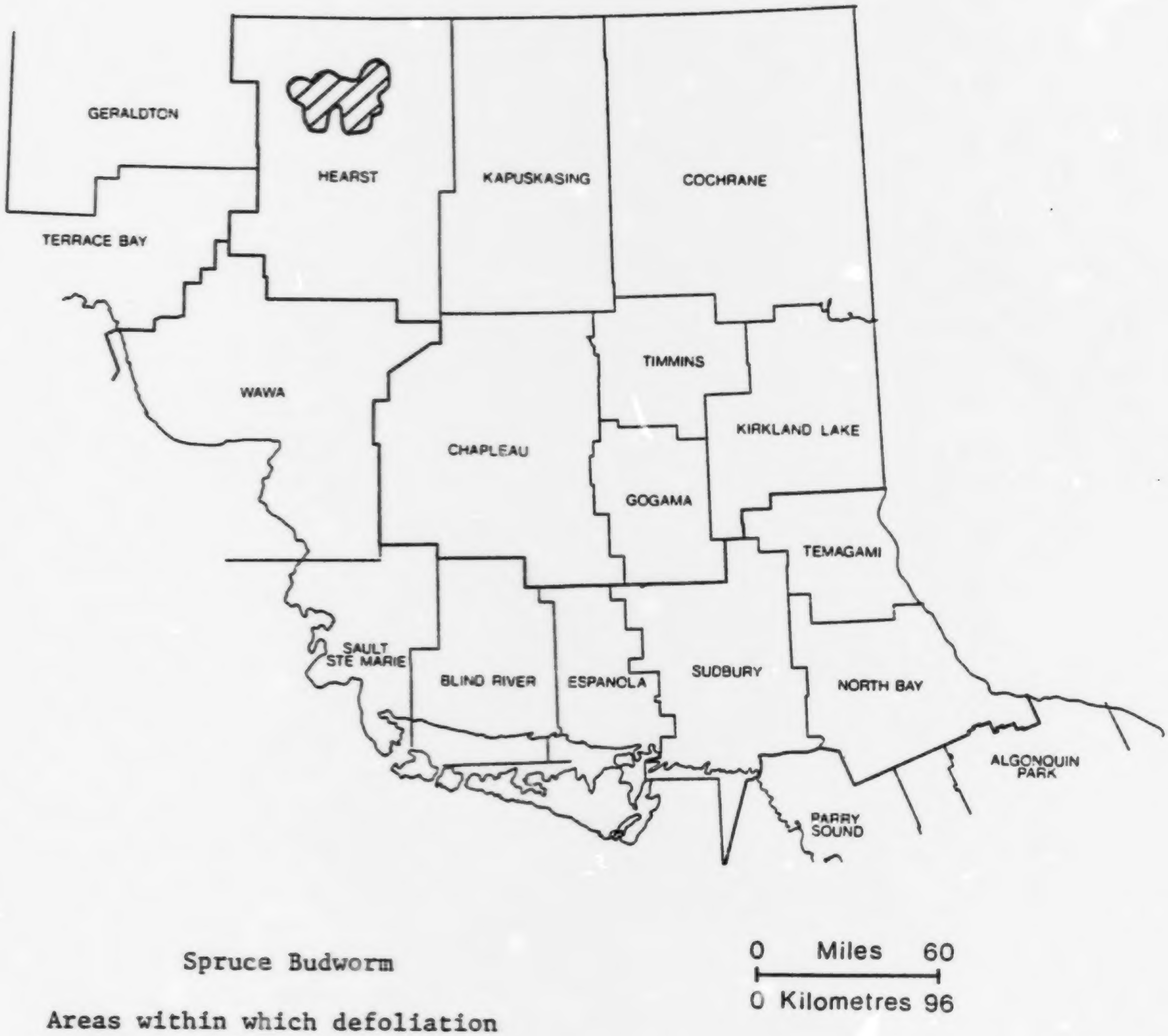
Spruce Budworm

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ⦶ or ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

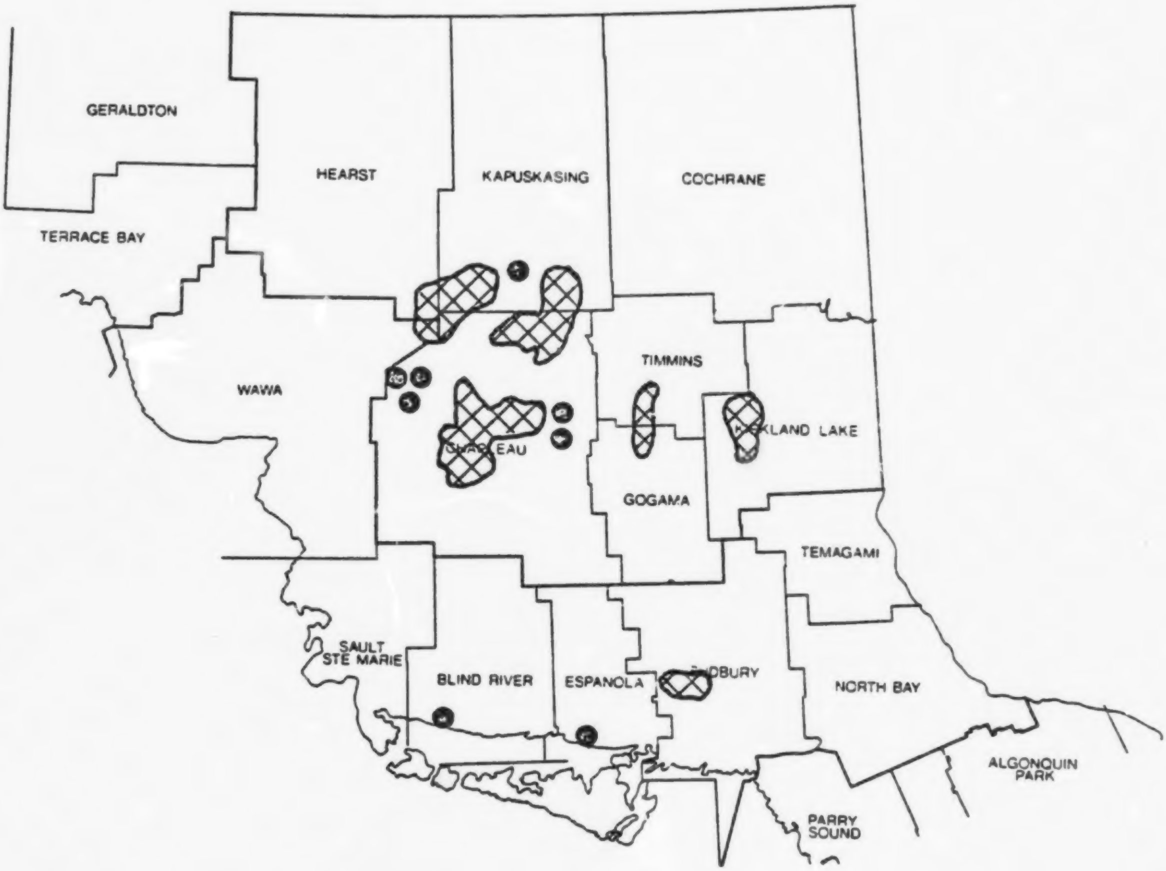
Spruce Budworm

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation ▨

NORTHEASTERN ONTARIO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TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

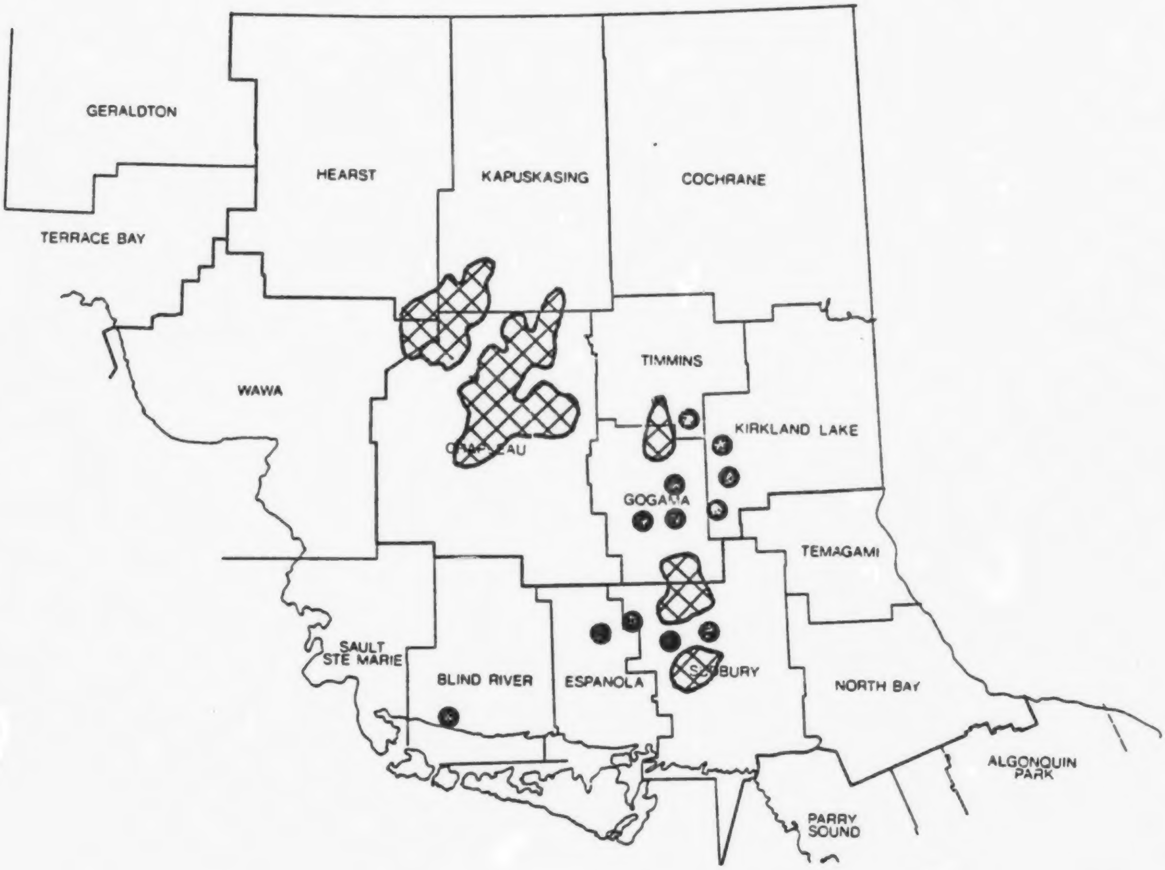
Spruce Budworm

Areas within which defoliation occurred in 1968

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60

0 Kilometres 96

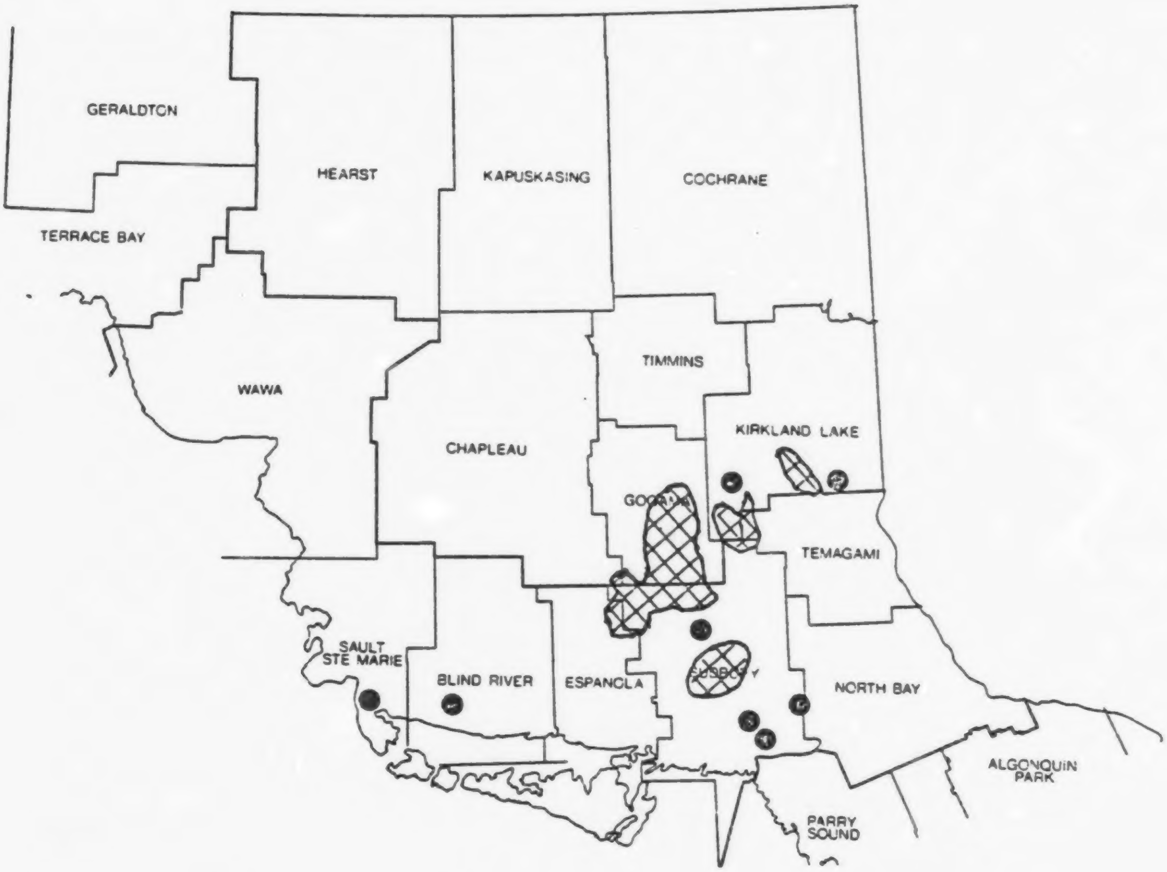
Spruce Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

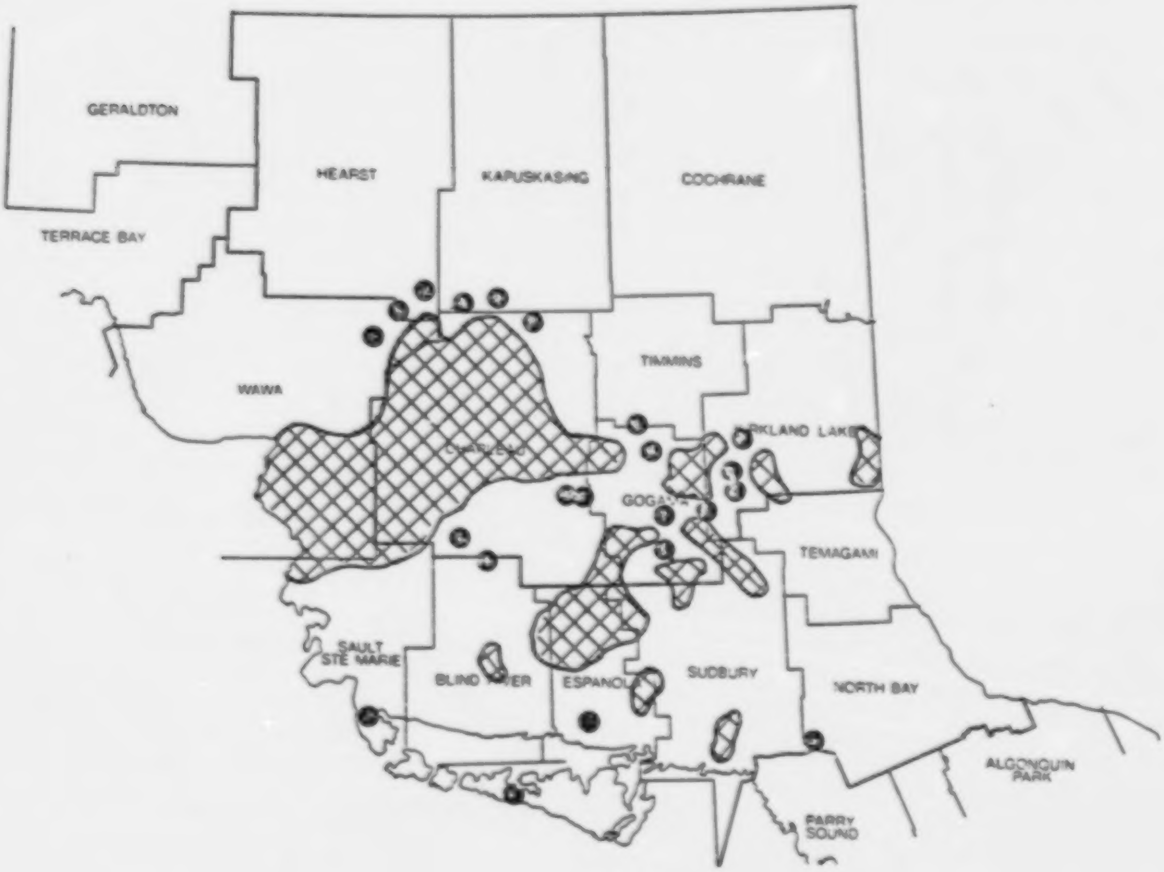
Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

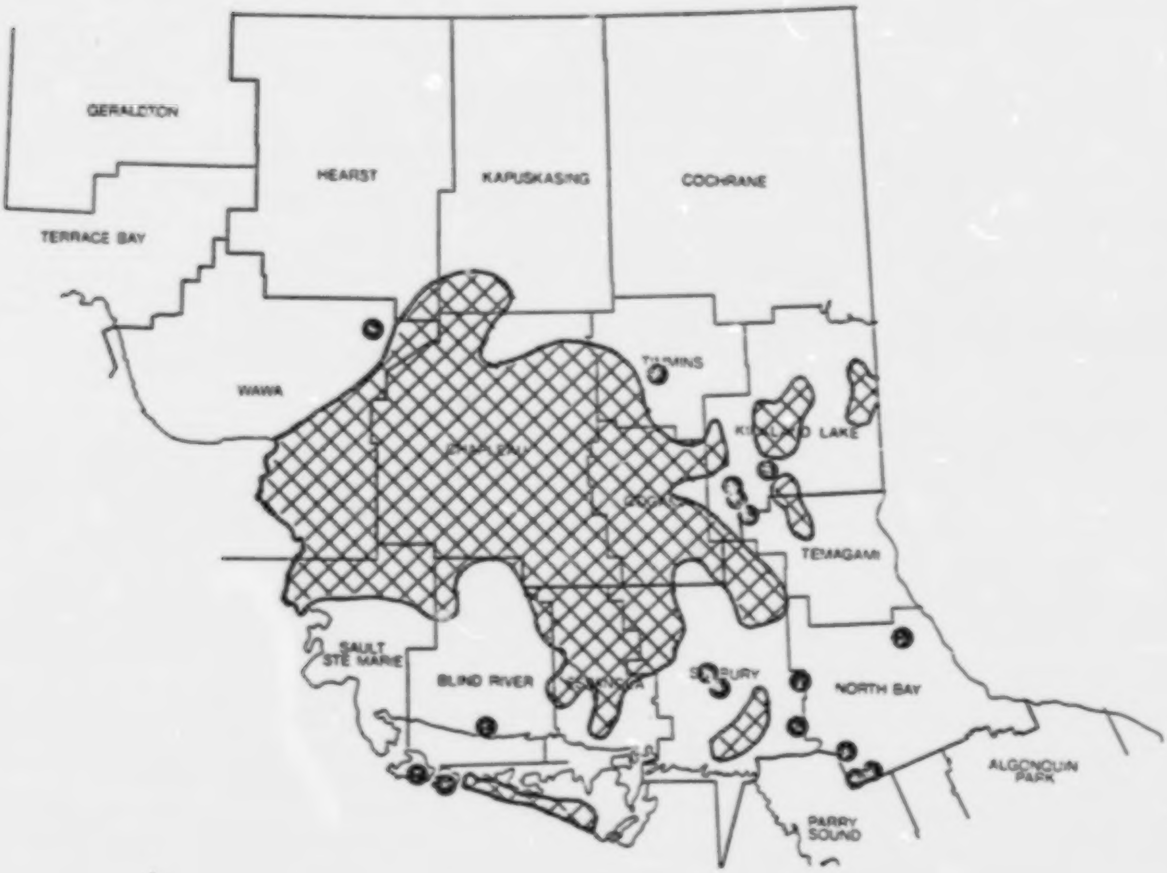
Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

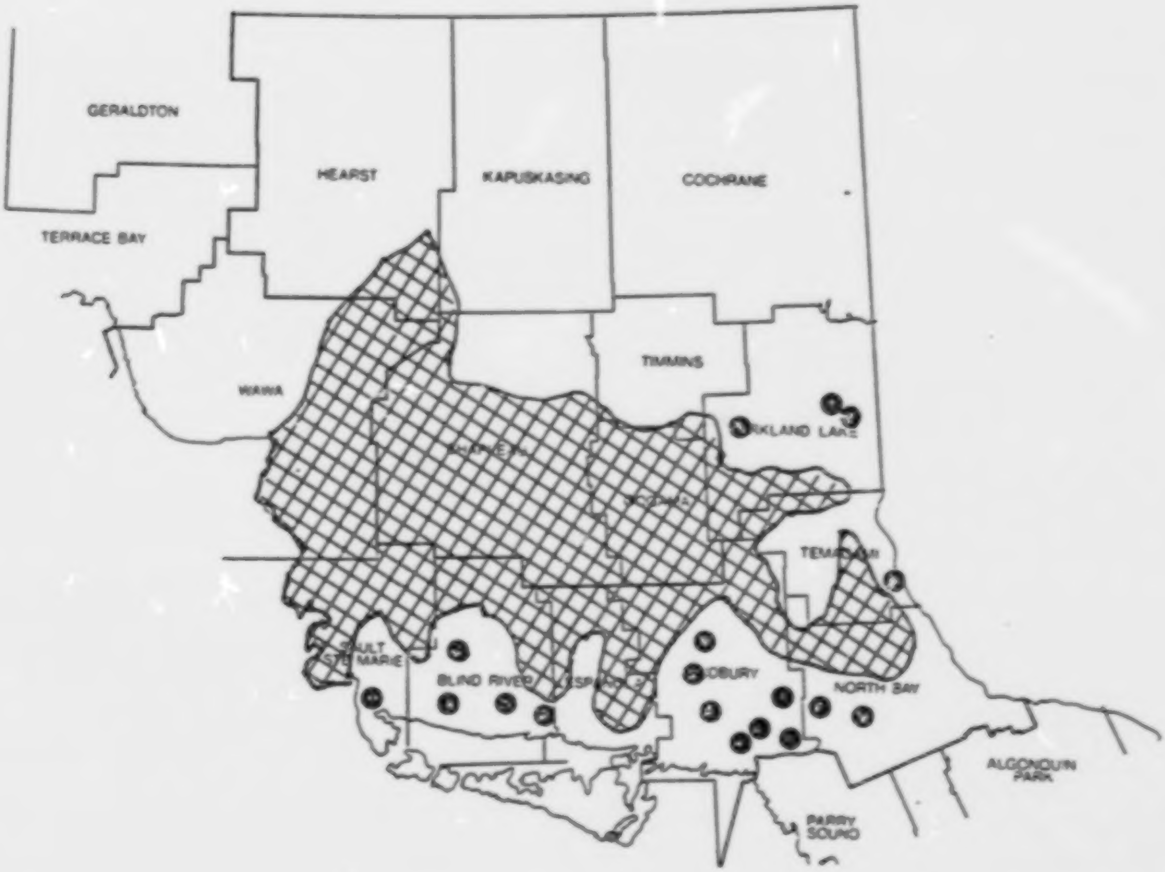
Spruce Budworm

Areas within which defoliation
occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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ESPA
DBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60

0 Kilometres 96

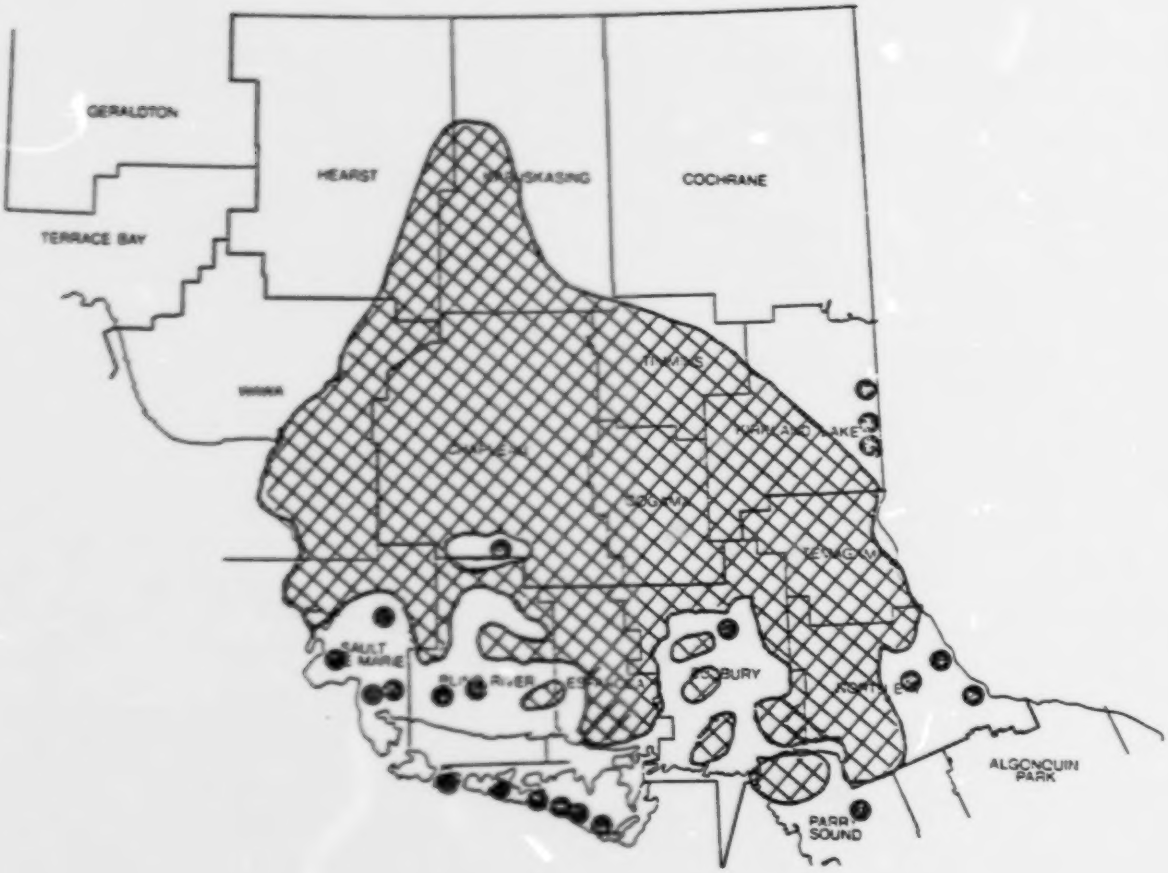
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

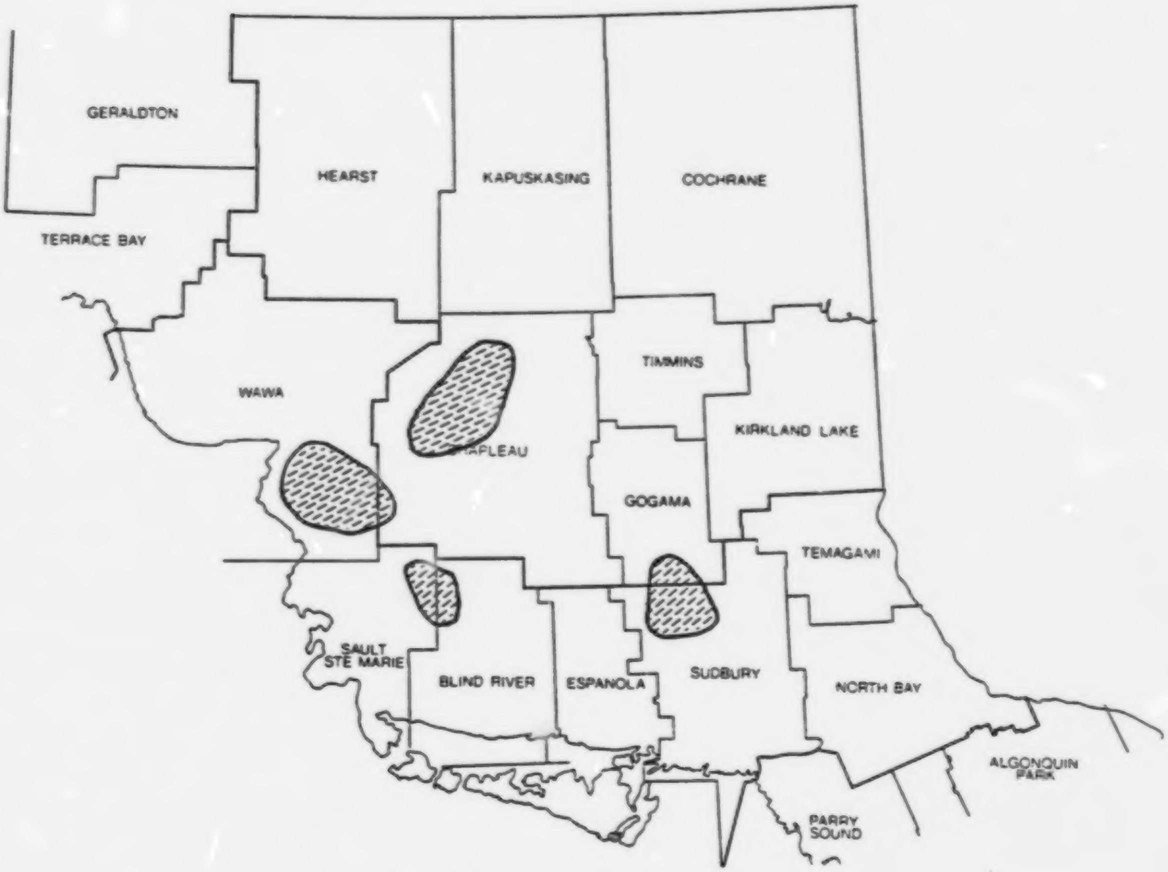
Spruce Budworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

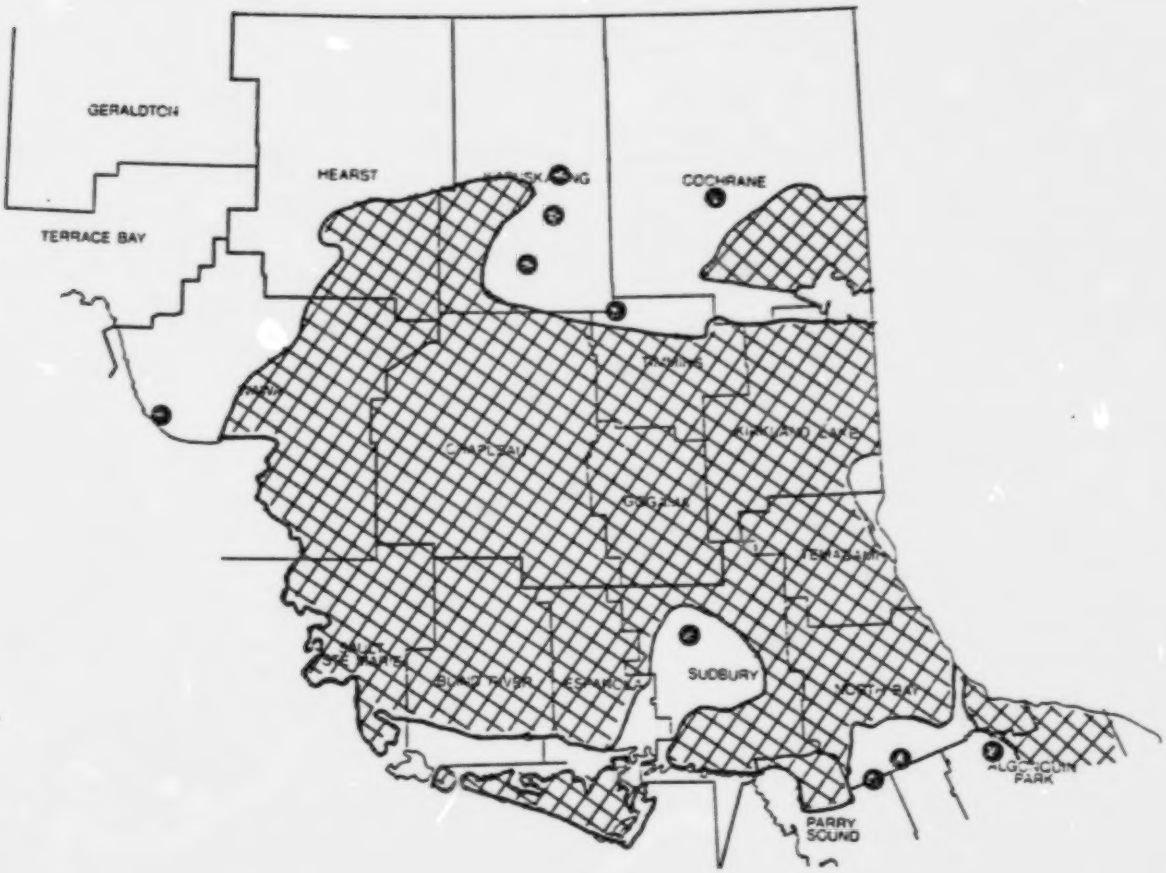
0 Miles 60
0 Kilometres 96

Areas within which balsam fir whole tree and top mortality occurred in 1974

LEGEND

Mortality	▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
PARRY SOUND
ALGONQUIN PARK

0 Miles 60
0 Kilometres 96

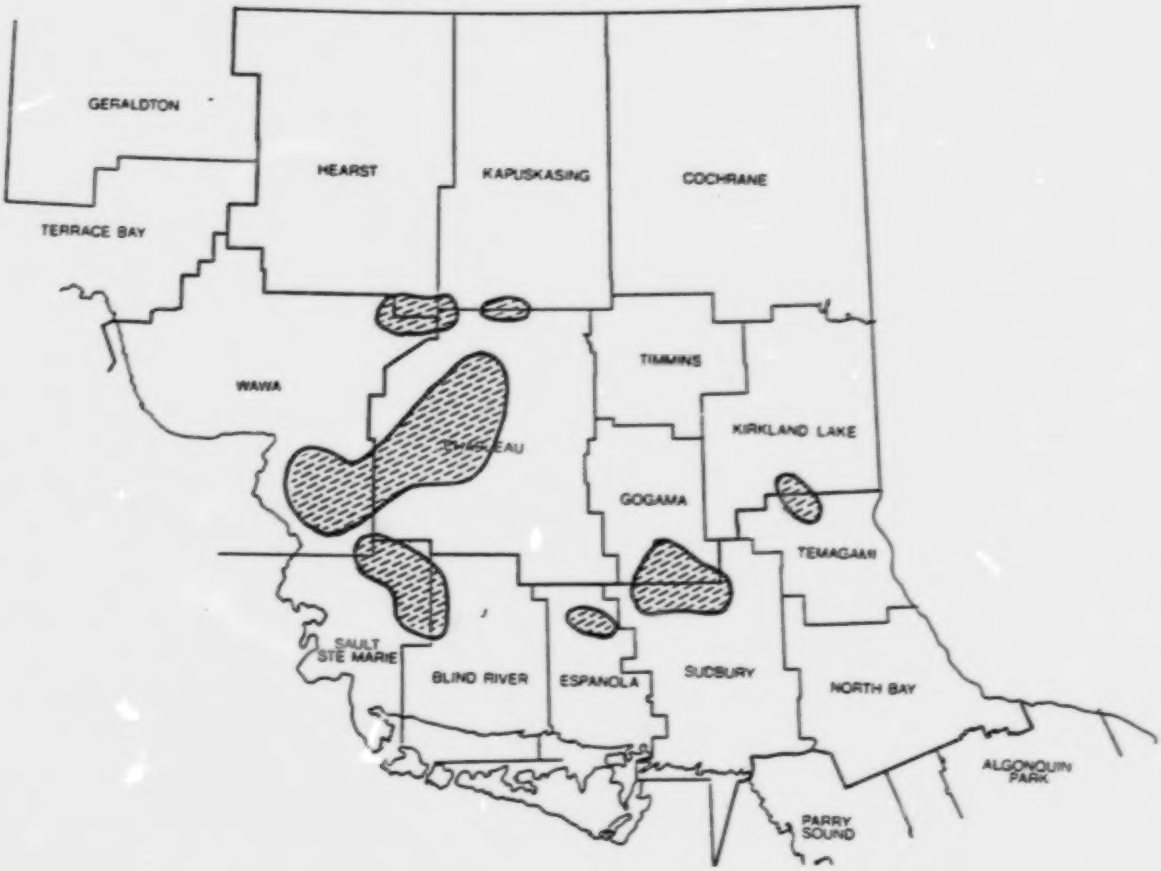
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

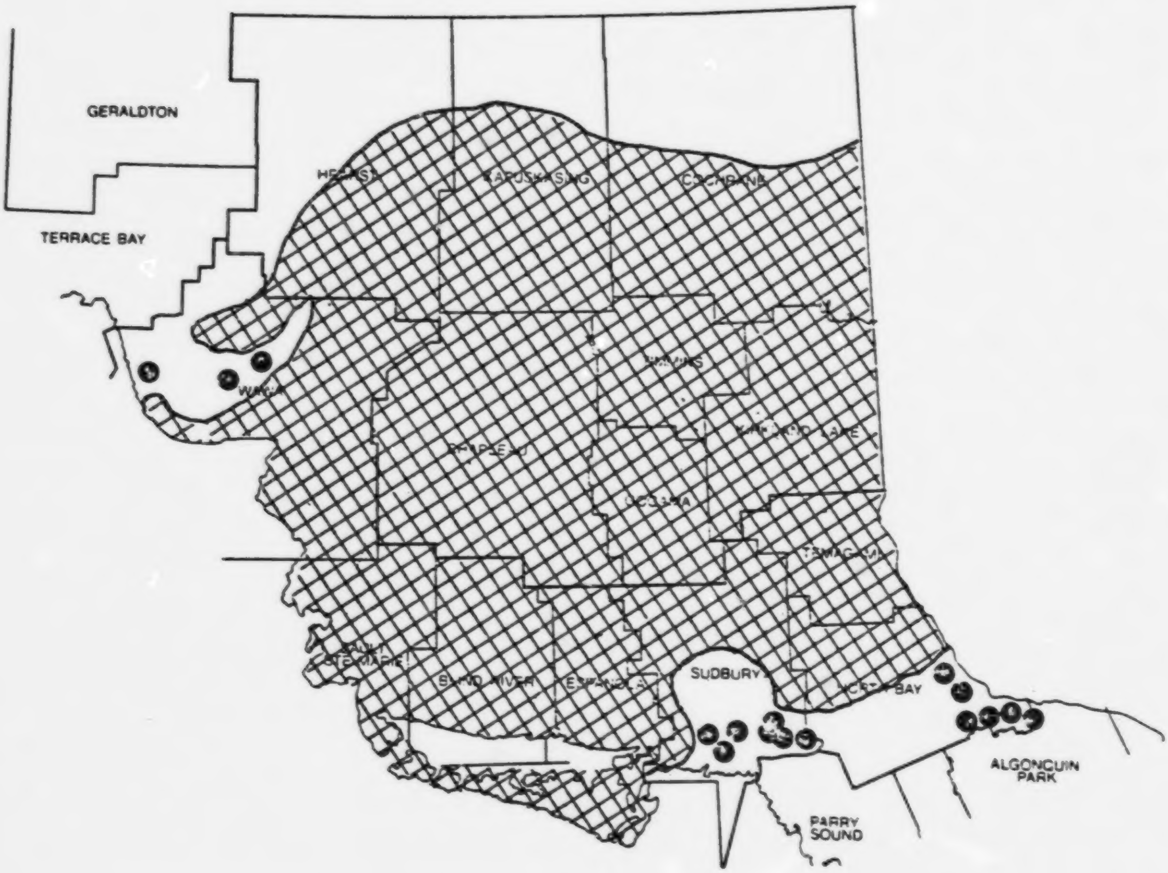
Areas within which balsam fir
whole tree and top mortality
occurred in 1975

0 Miles 60
0 Kilometres 96

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

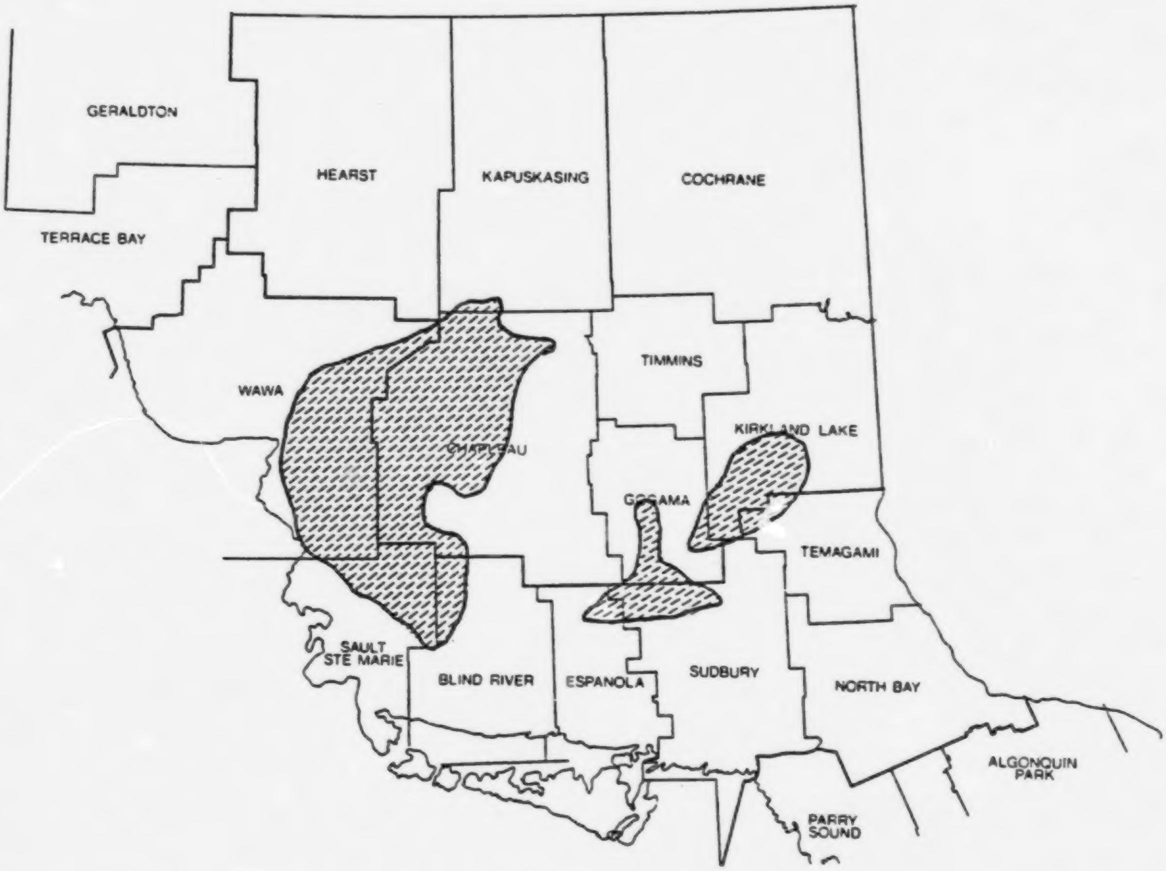
Spruce Budworm

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

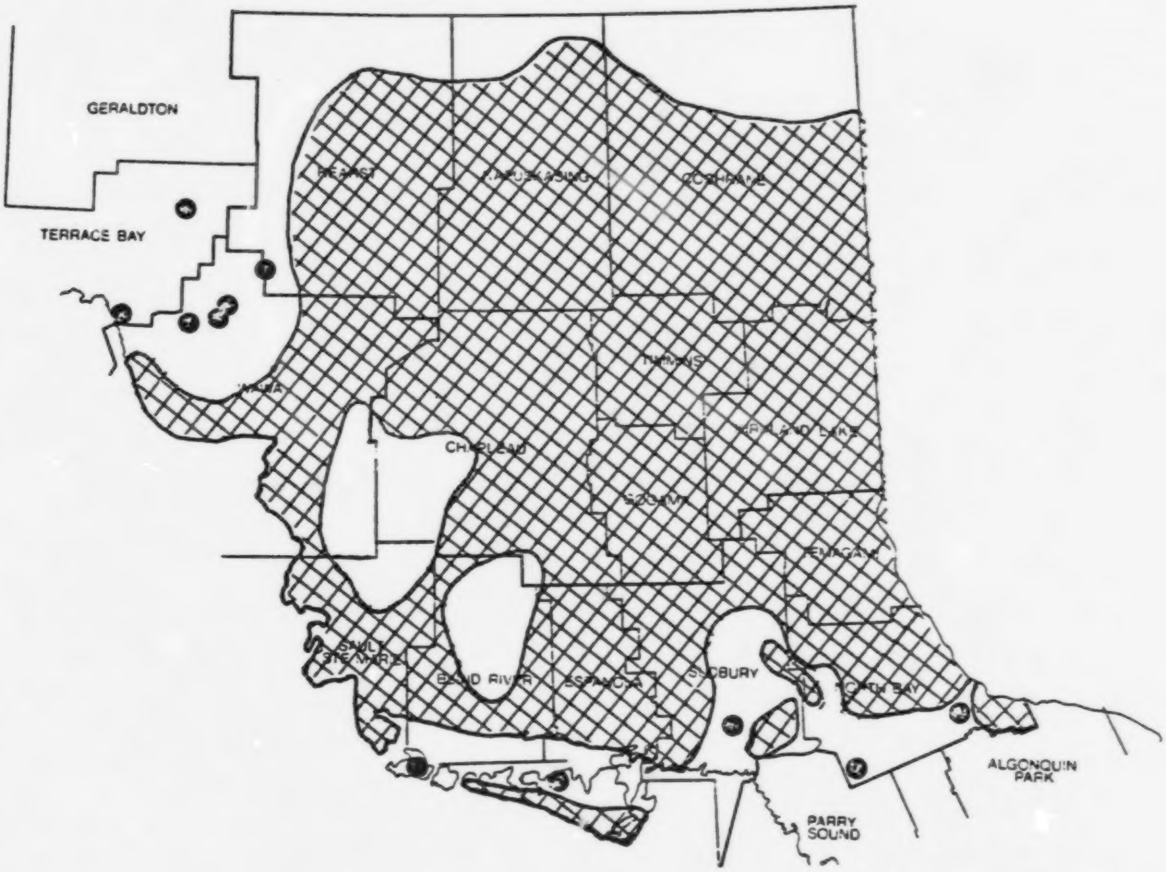
0 Miles 60
0 Kilometres 96

Areas within which balsam fir
whole tree and top mortality
occurred in 1976

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

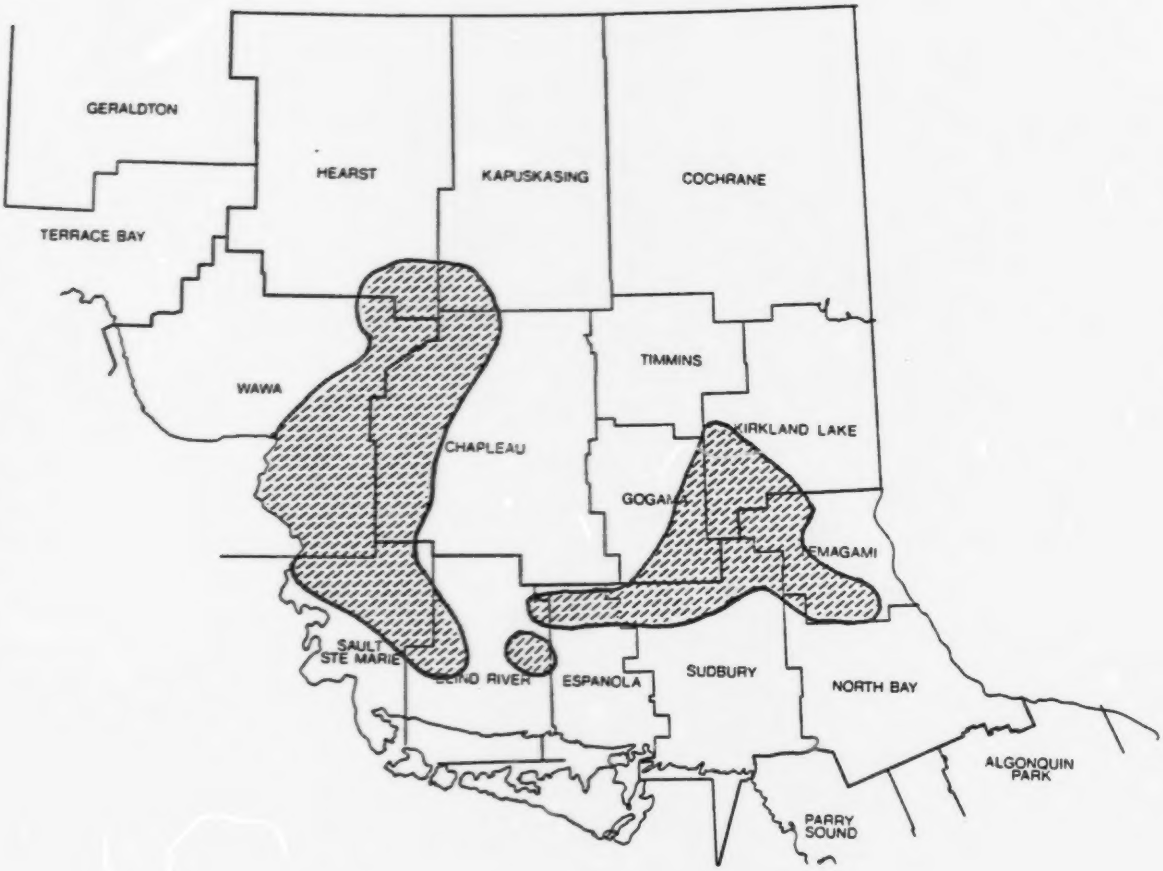
Spruce Budworm

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

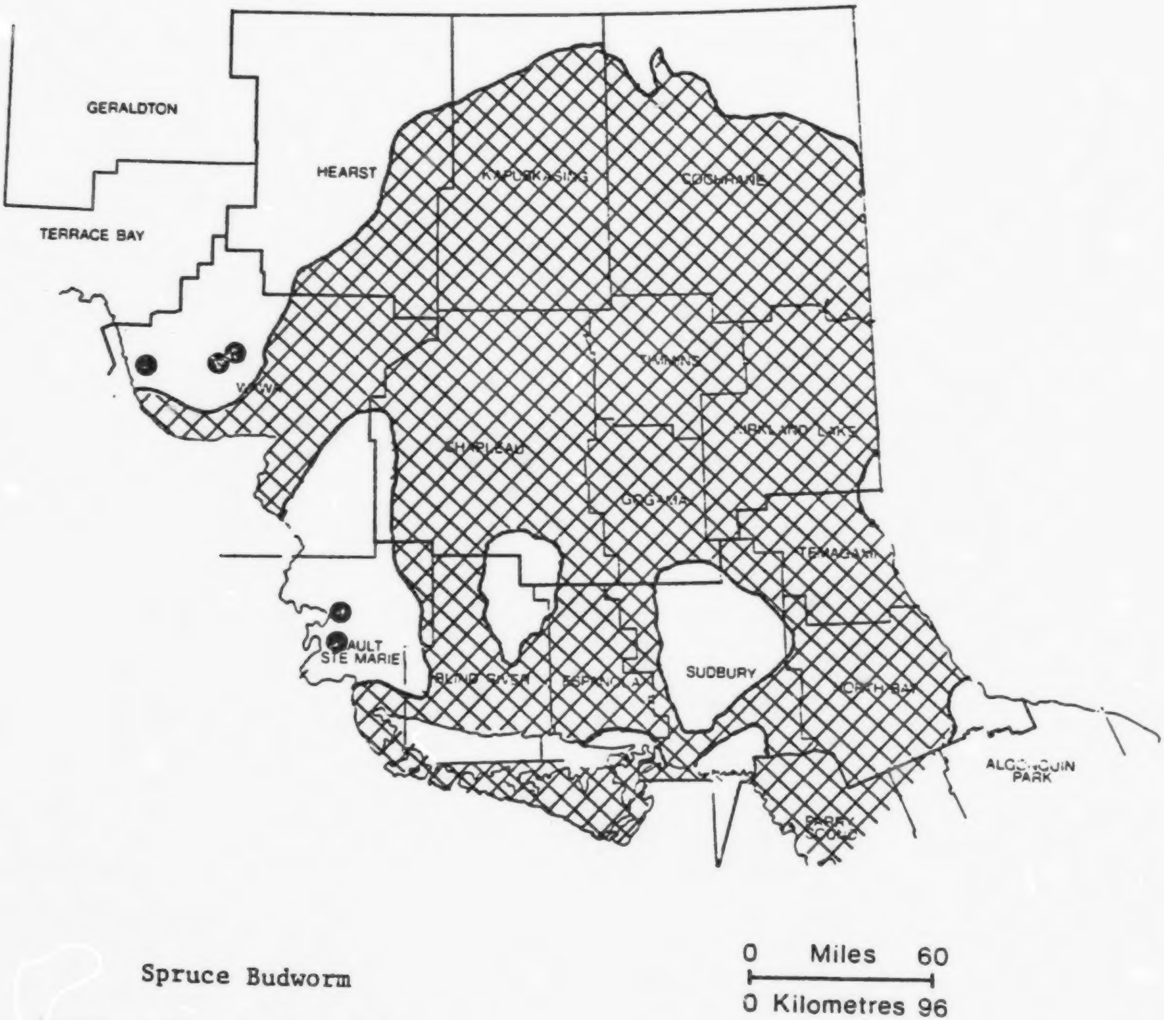
0 Miles 60
0 Kilometres 96

Areas within which balsam fir whole tree and top mortality occurred in 1977

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

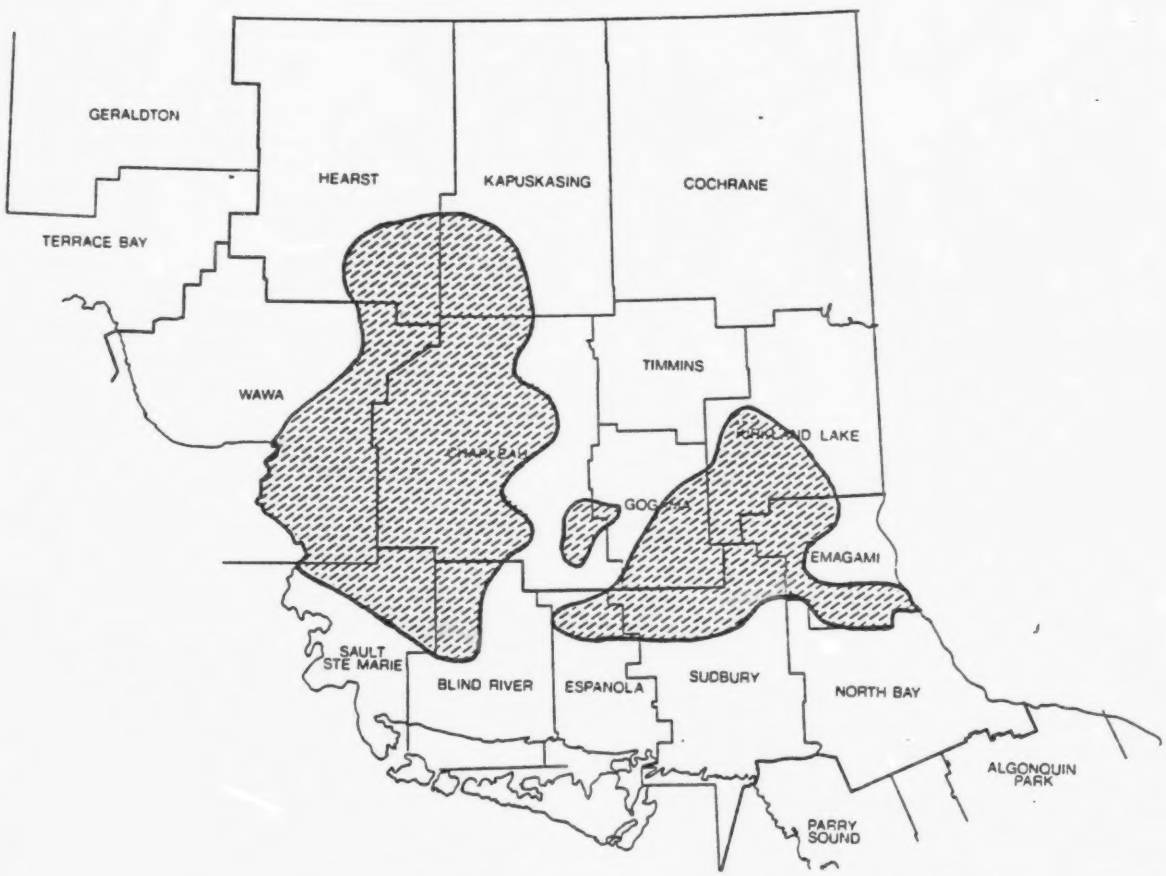
Spruce Budworm

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

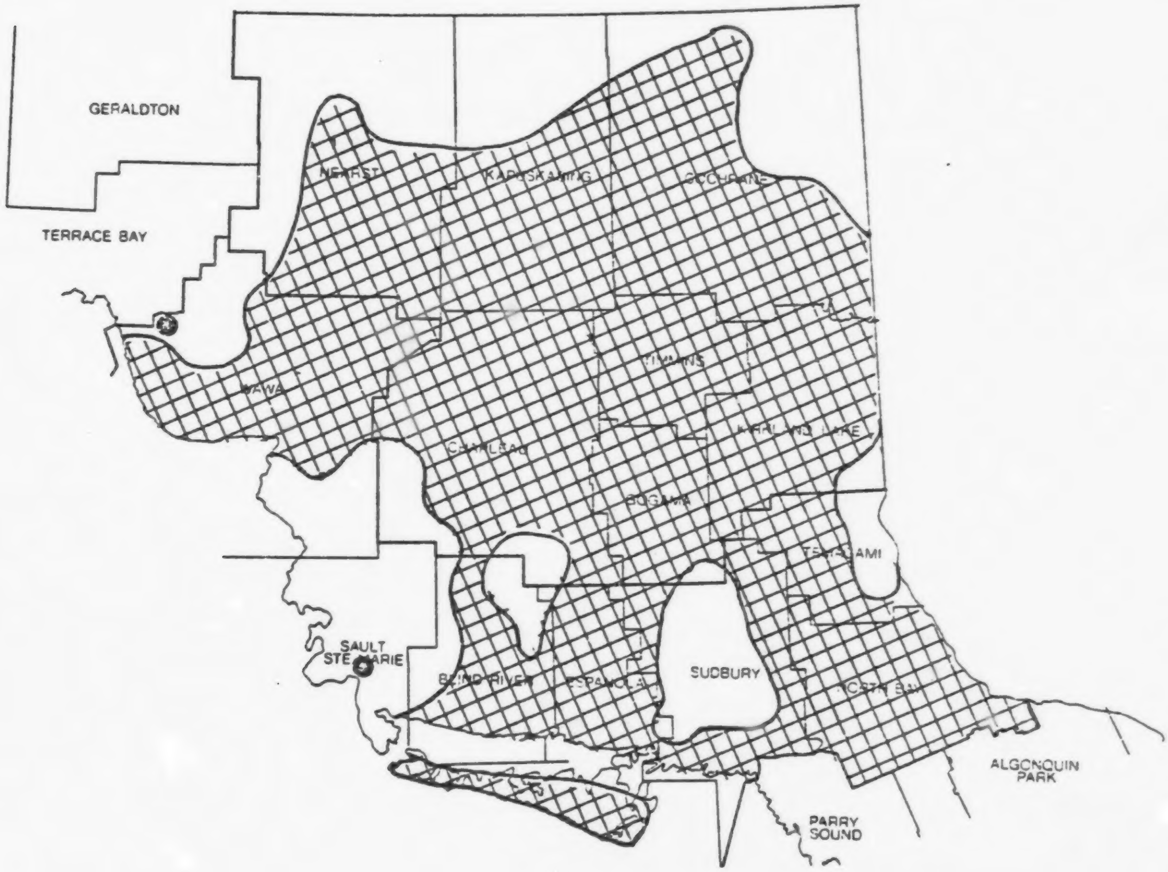
Areas within which balsam fir
whole tree and top mortality
occurred in 1978

0 Miles 60
0 Kilometres 96

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

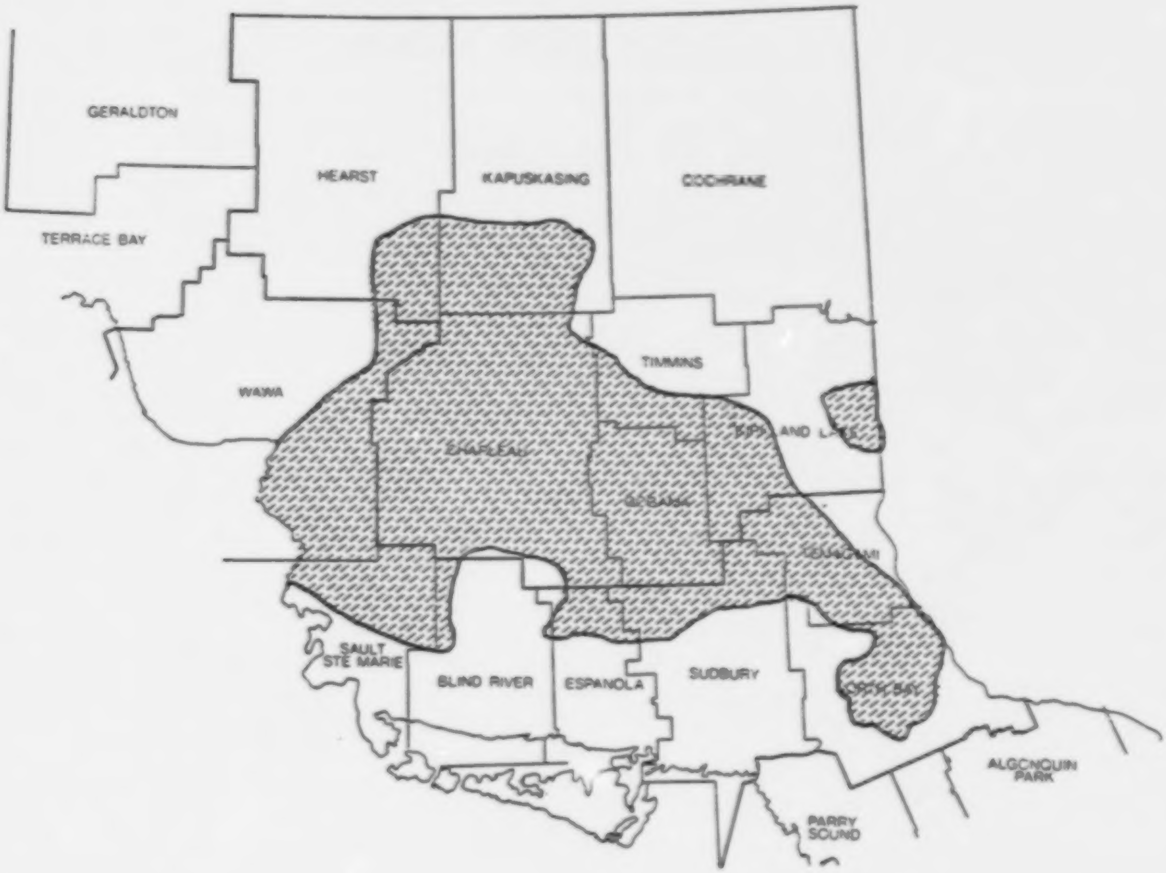
Spruce Budworm

Areas within which defoliation
occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Spruce Budworm

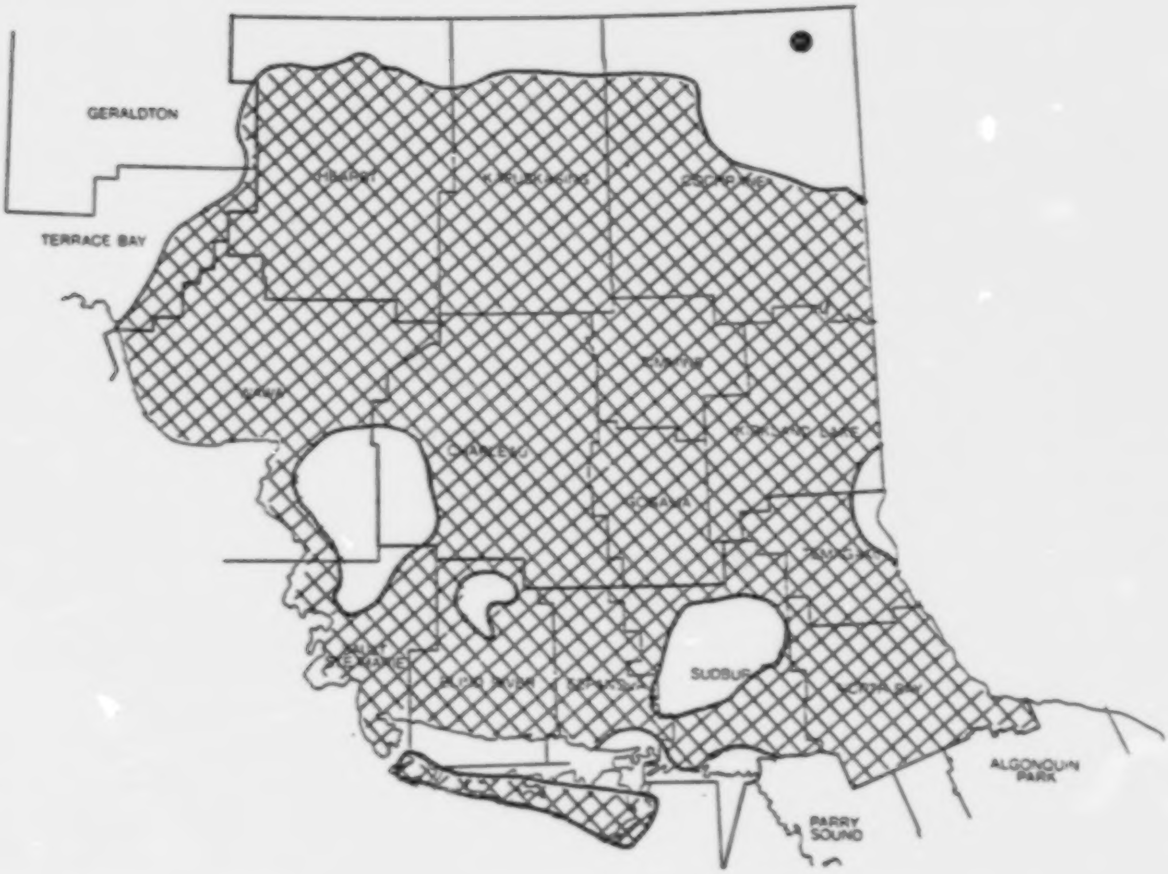
0 Miles 60
0 Kilometres 96

Areas within which balsam fir whole tree and top mortality occurred in 1979

LEGEND

Mortality ▨

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

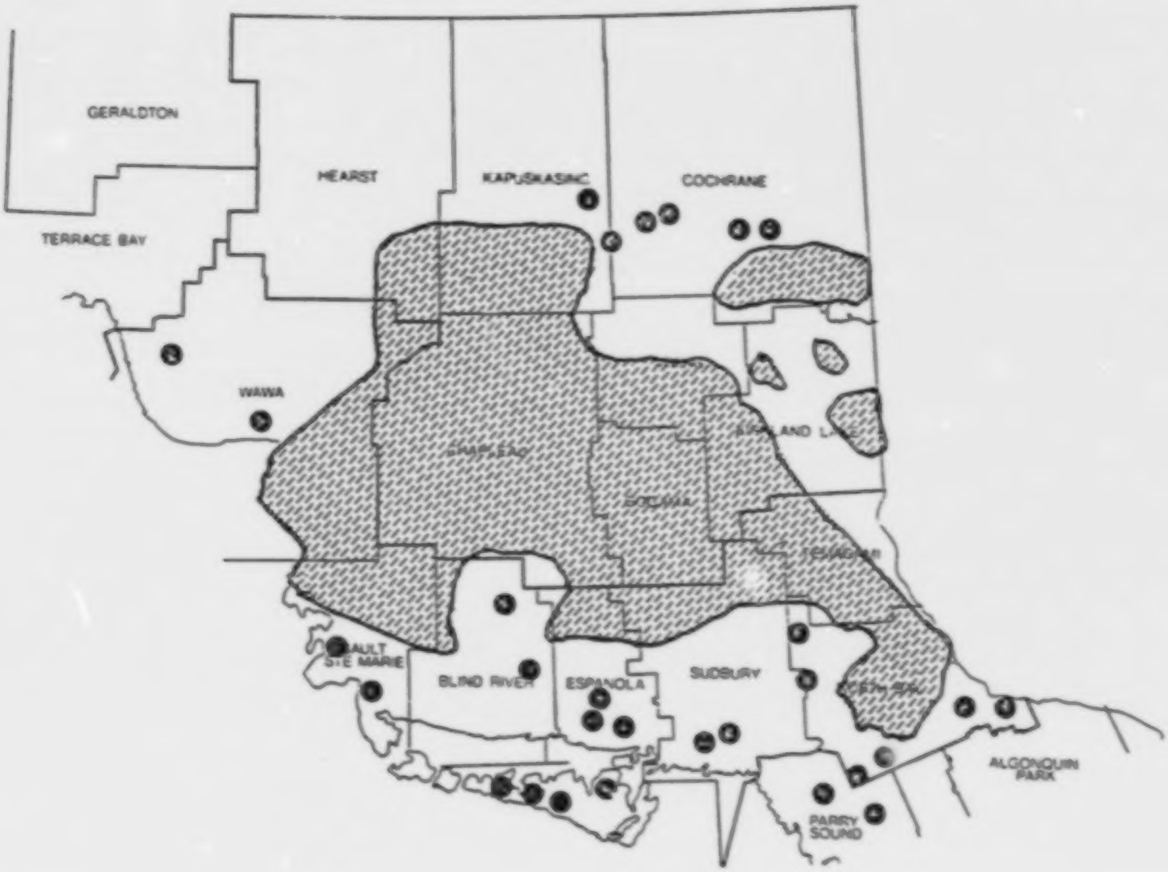
Spruce Budworm

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

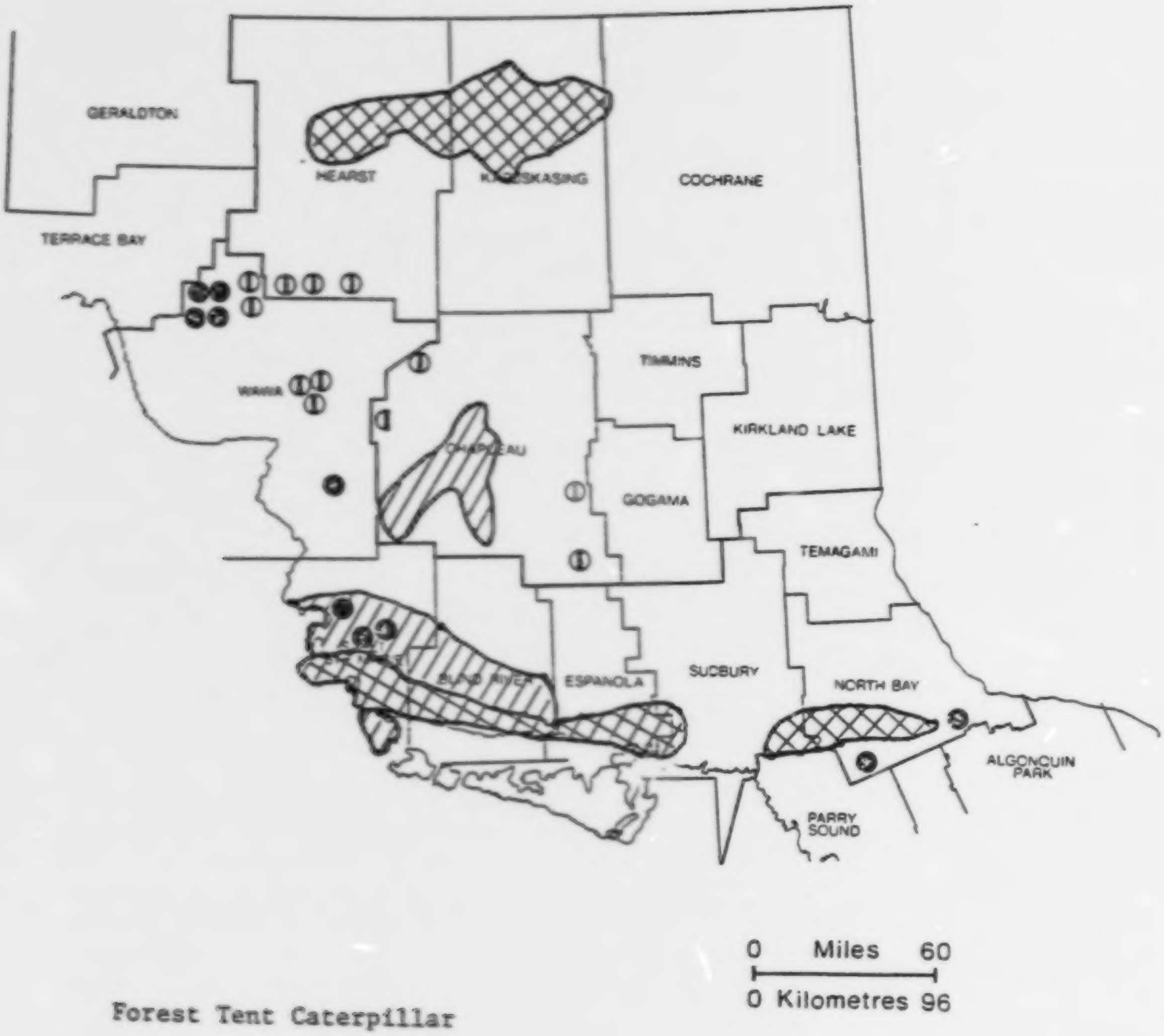
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1980

LEGEND

Mortality ▨ or ●

NORTHEASTERN ONTARIO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SAULT STE. MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

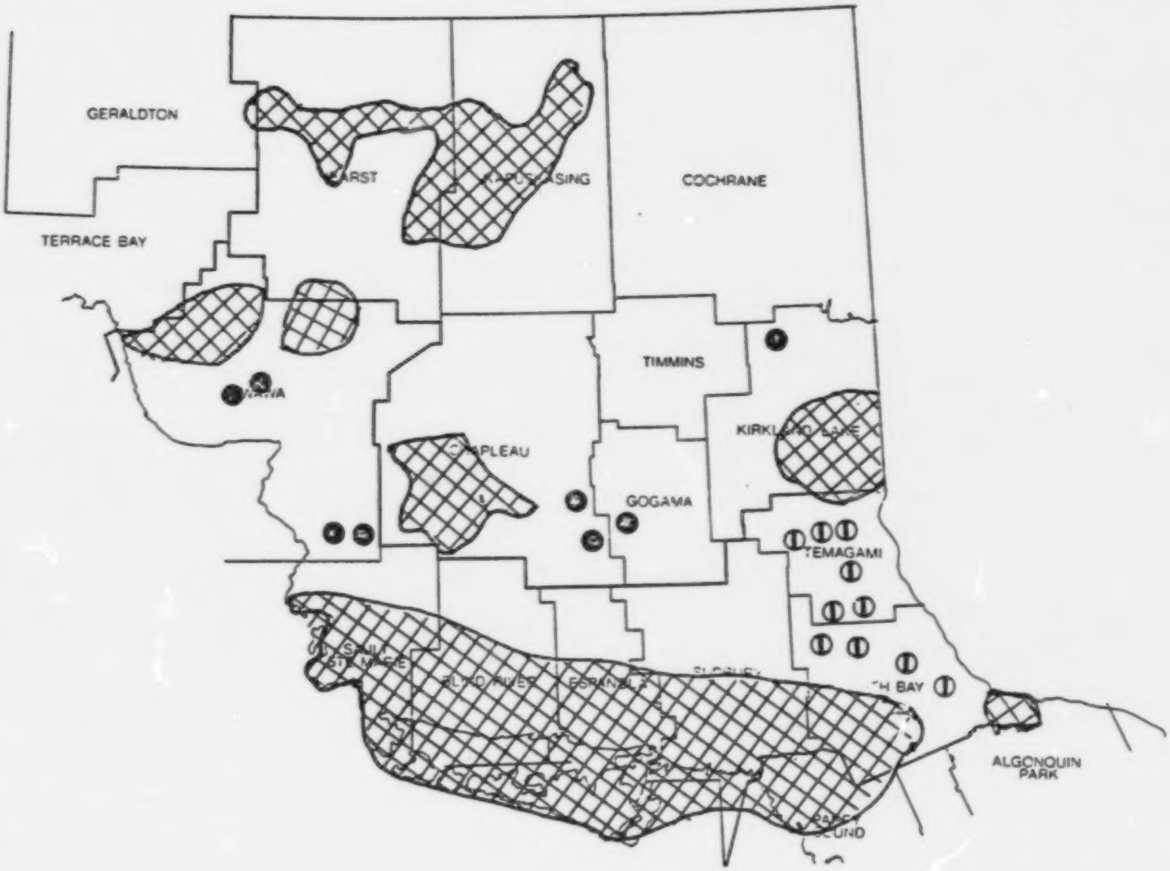
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

0 Miles 60

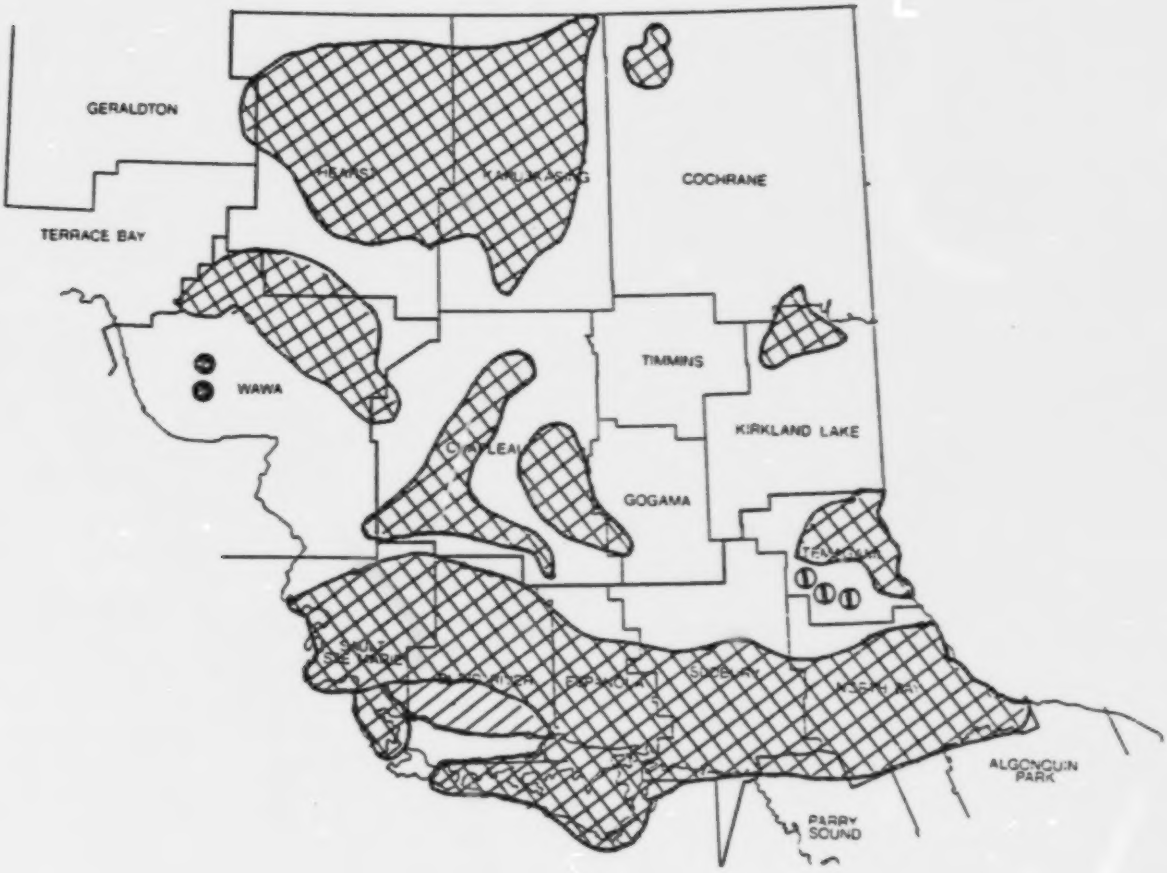
0 Kilometres 96

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

0 Miles 60

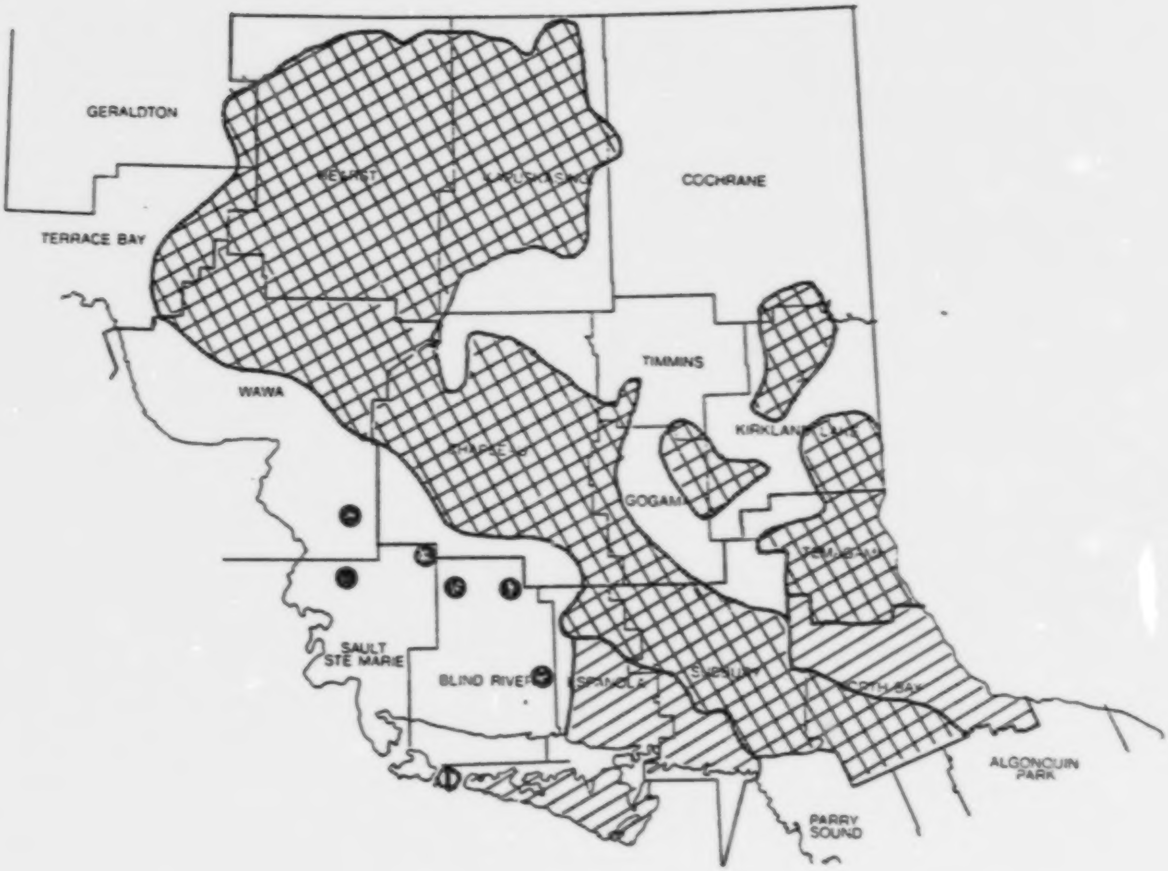
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

0 Miles 60

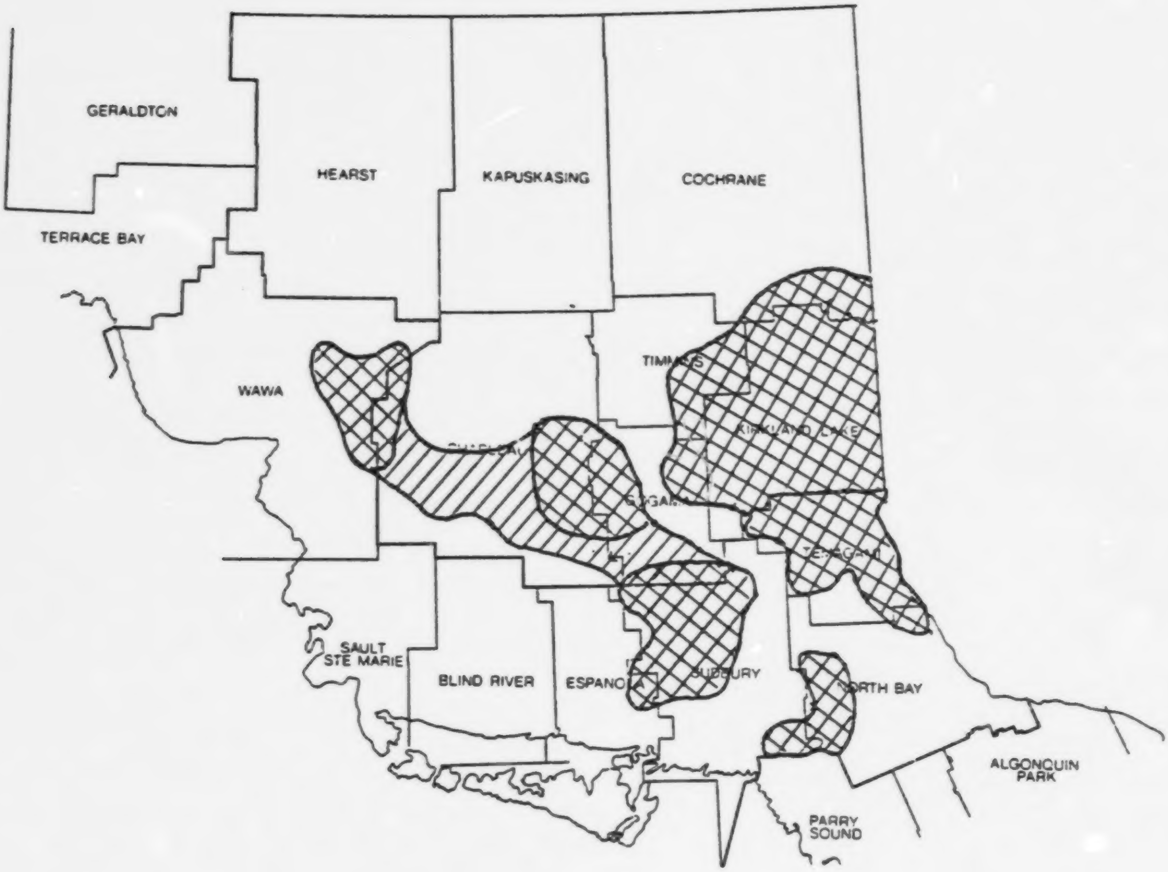
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▦

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

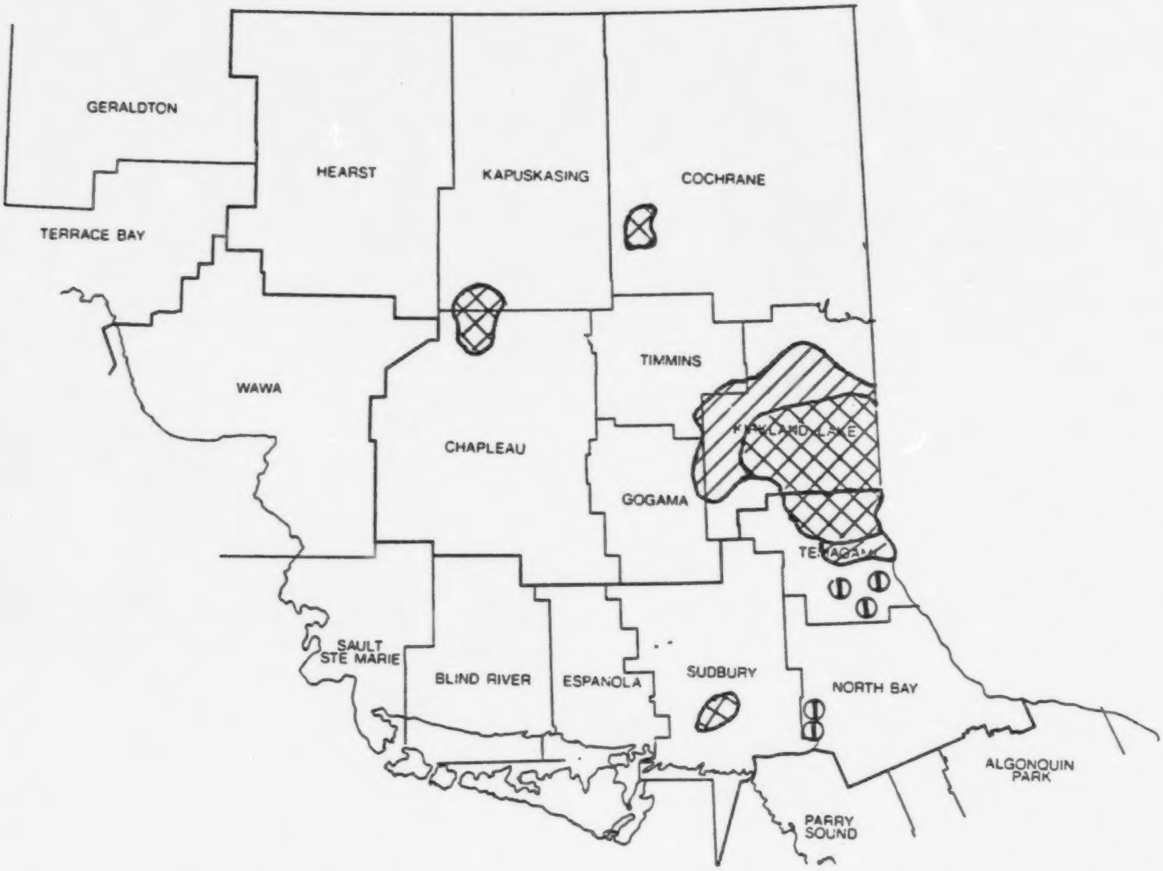
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1955

0 Miles 60

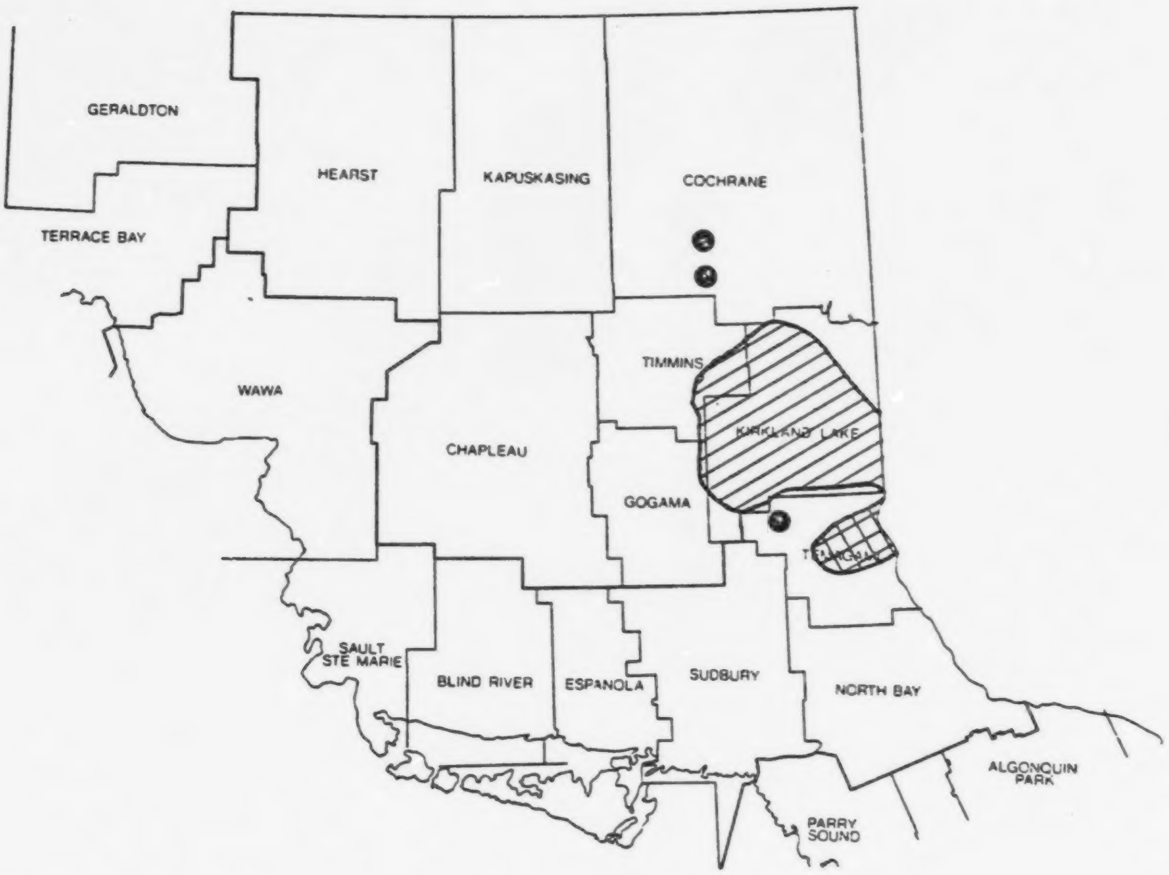
0 Kilometres 96

LEGEND

Light defoliation ⦶ or ▨

Moderate-to-severe defoliation ▩

NORTHEASTERN ONTARIO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BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1956

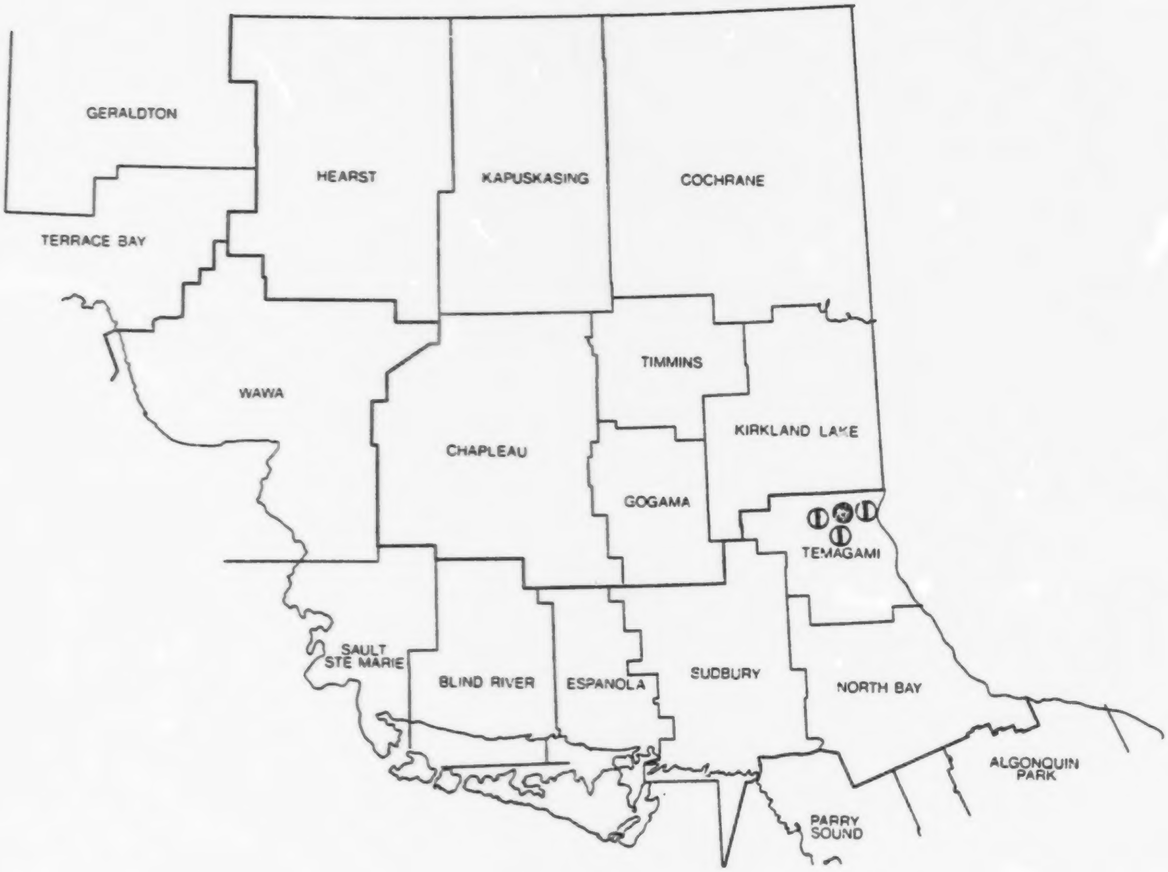
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

0 Miles 60
0 Kilometres 96

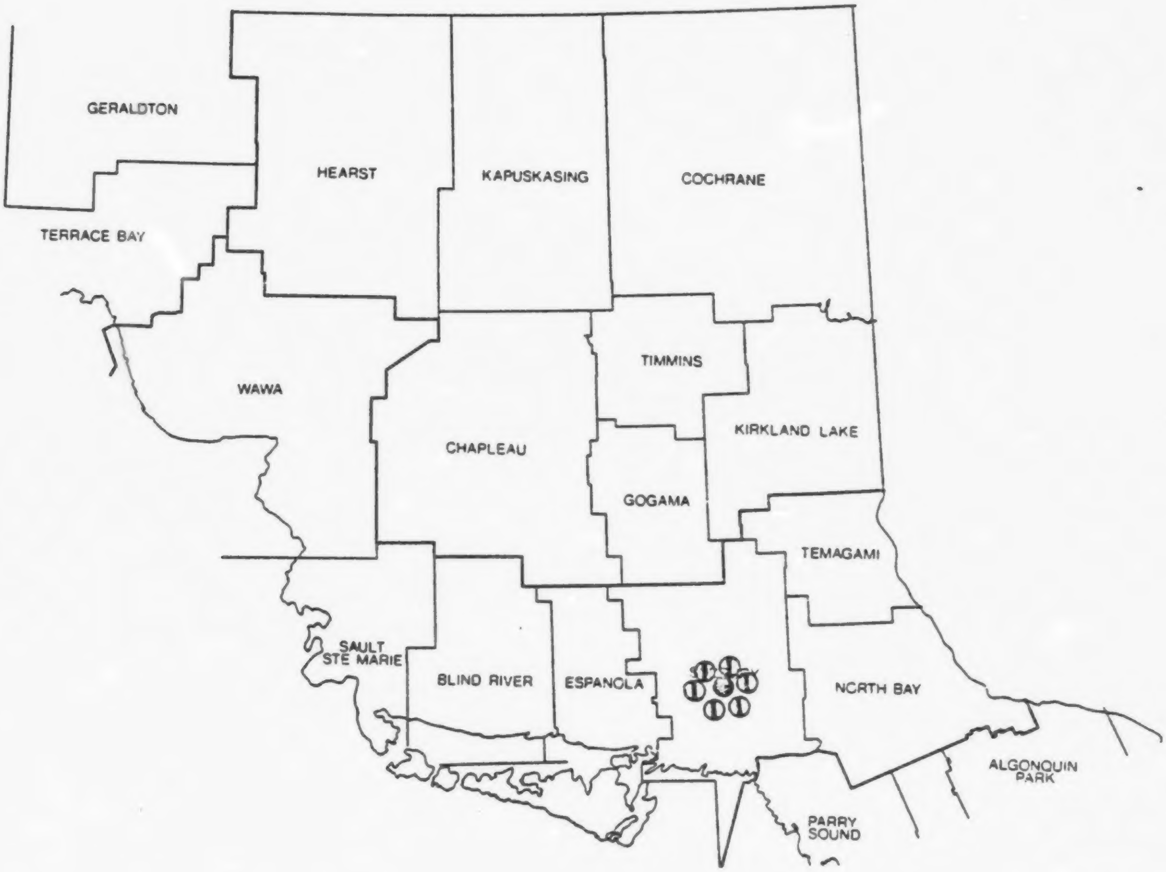
Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO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CHAPLEAU
GOGAMA
TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

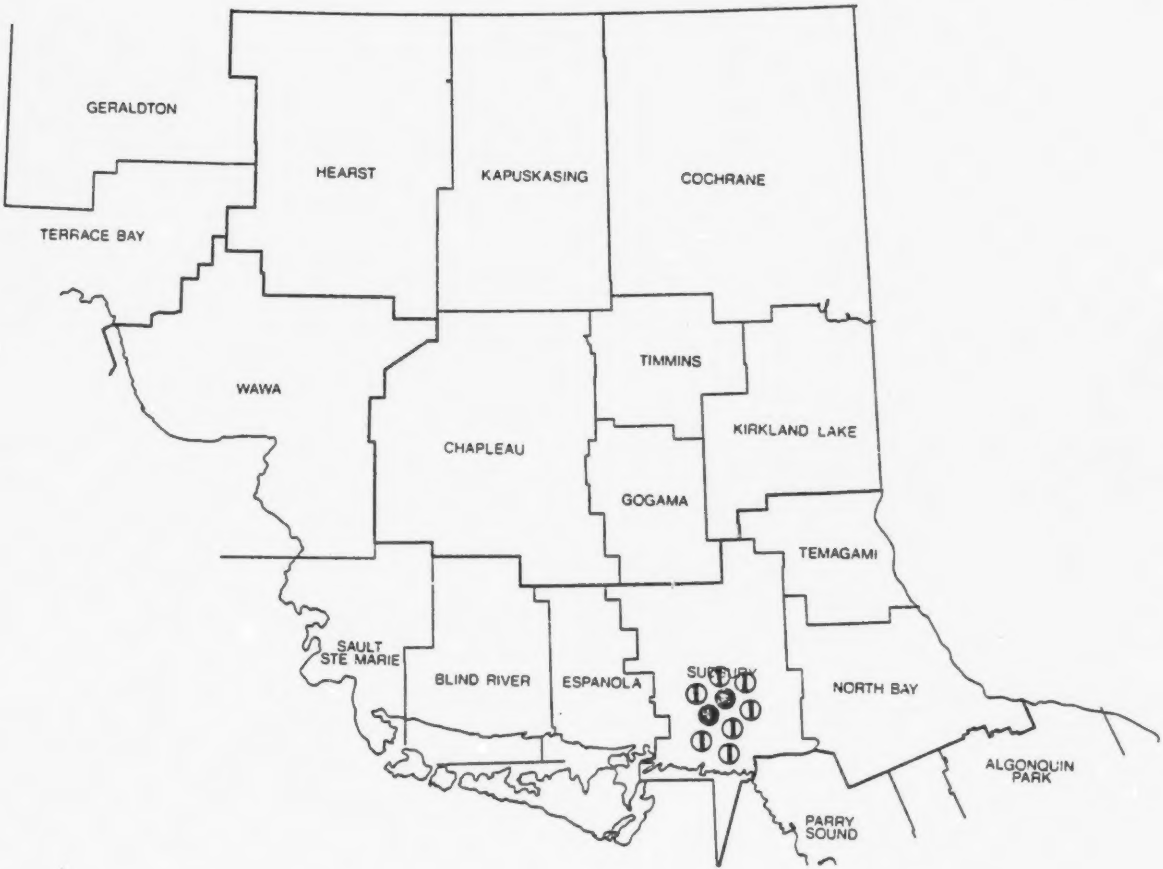
Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1961

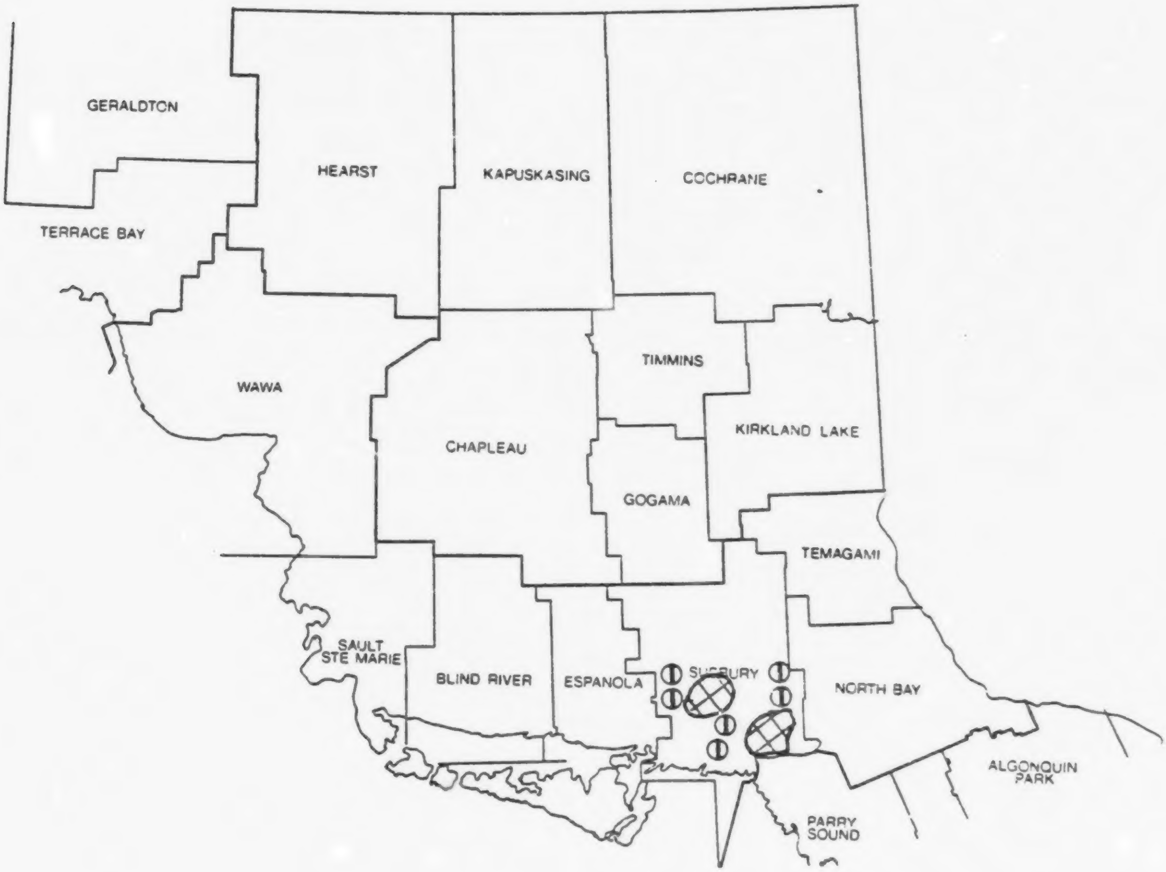
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1962

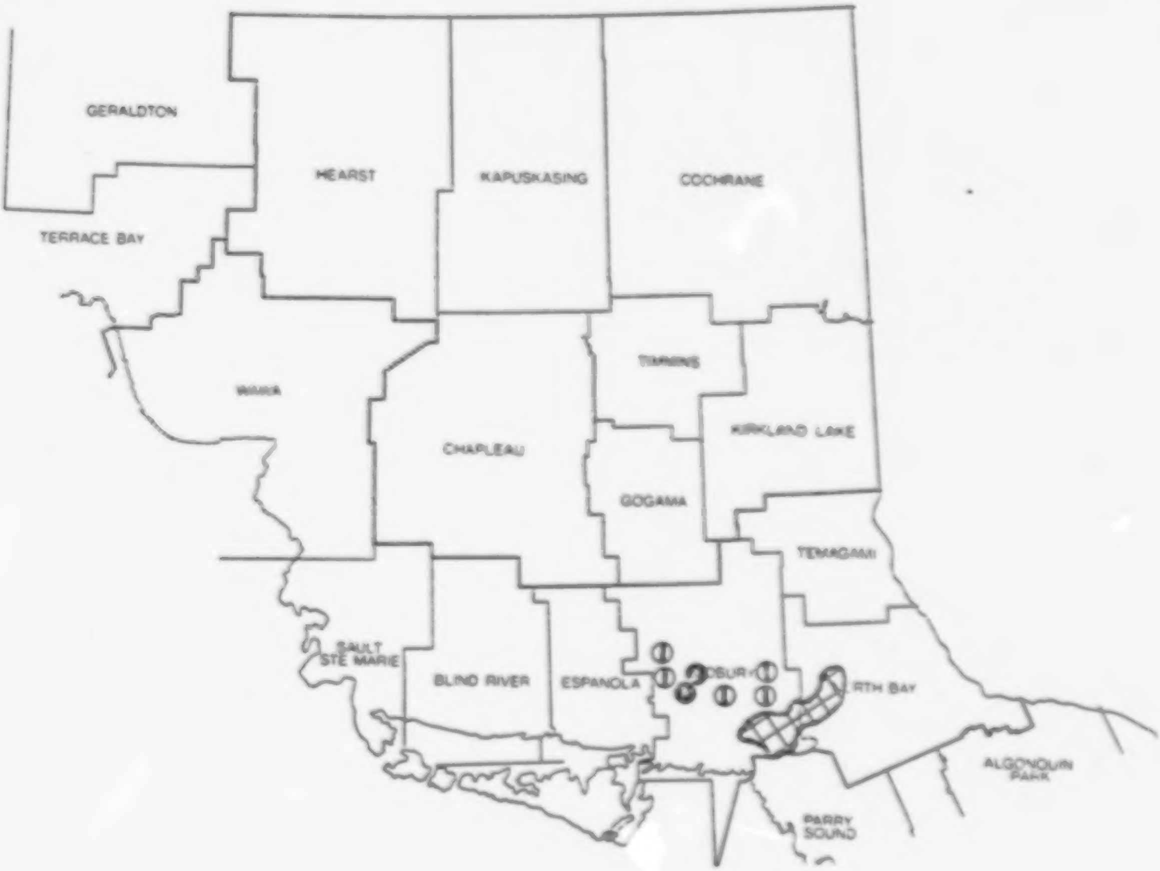
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
DBUR
RTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

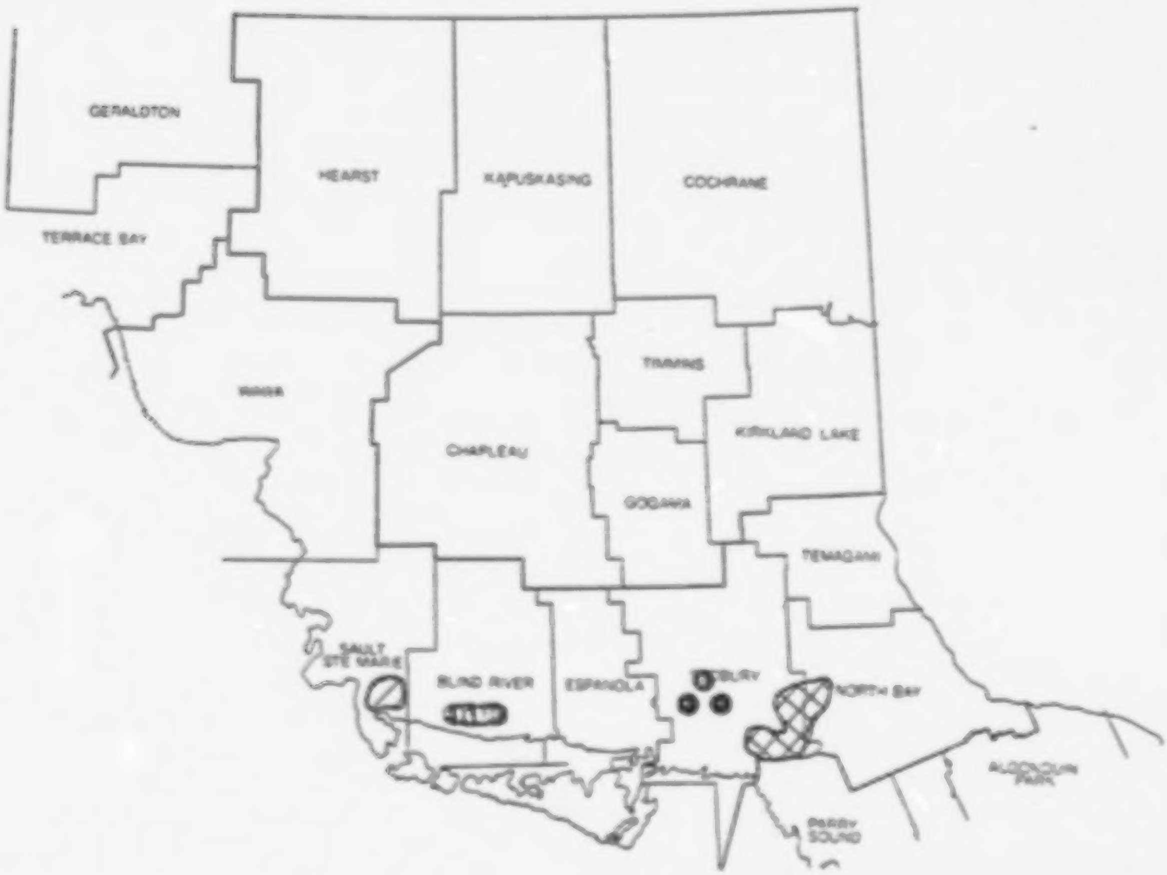
Areas within which defoliation occurred in 1963

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

0 Miles 60

0 Kilometres 96

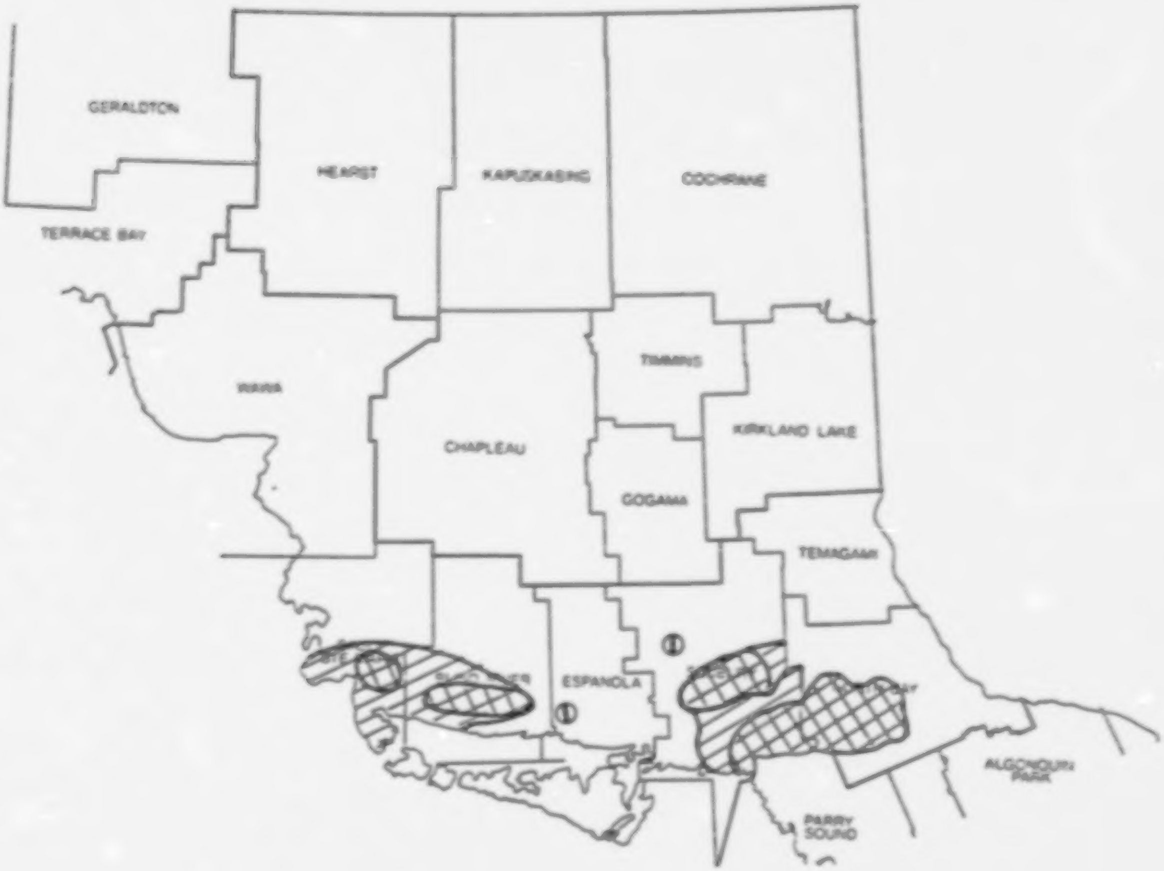
Areas within which defoliation occurred in 1964

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO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TEMAGAMI
ESPANOLA
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

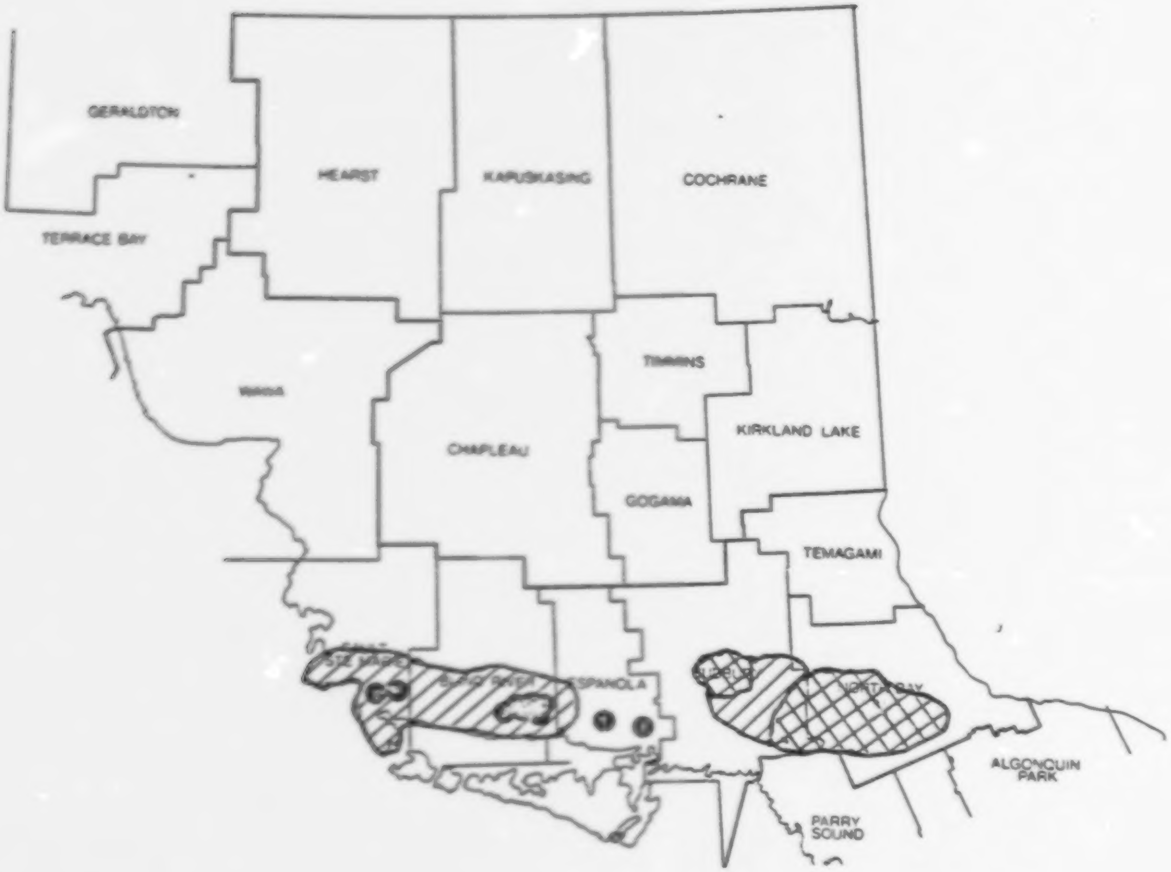
Areas within which defoliation occurred in 1965

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ▦

NORTHEASTERN ONTARIO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STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

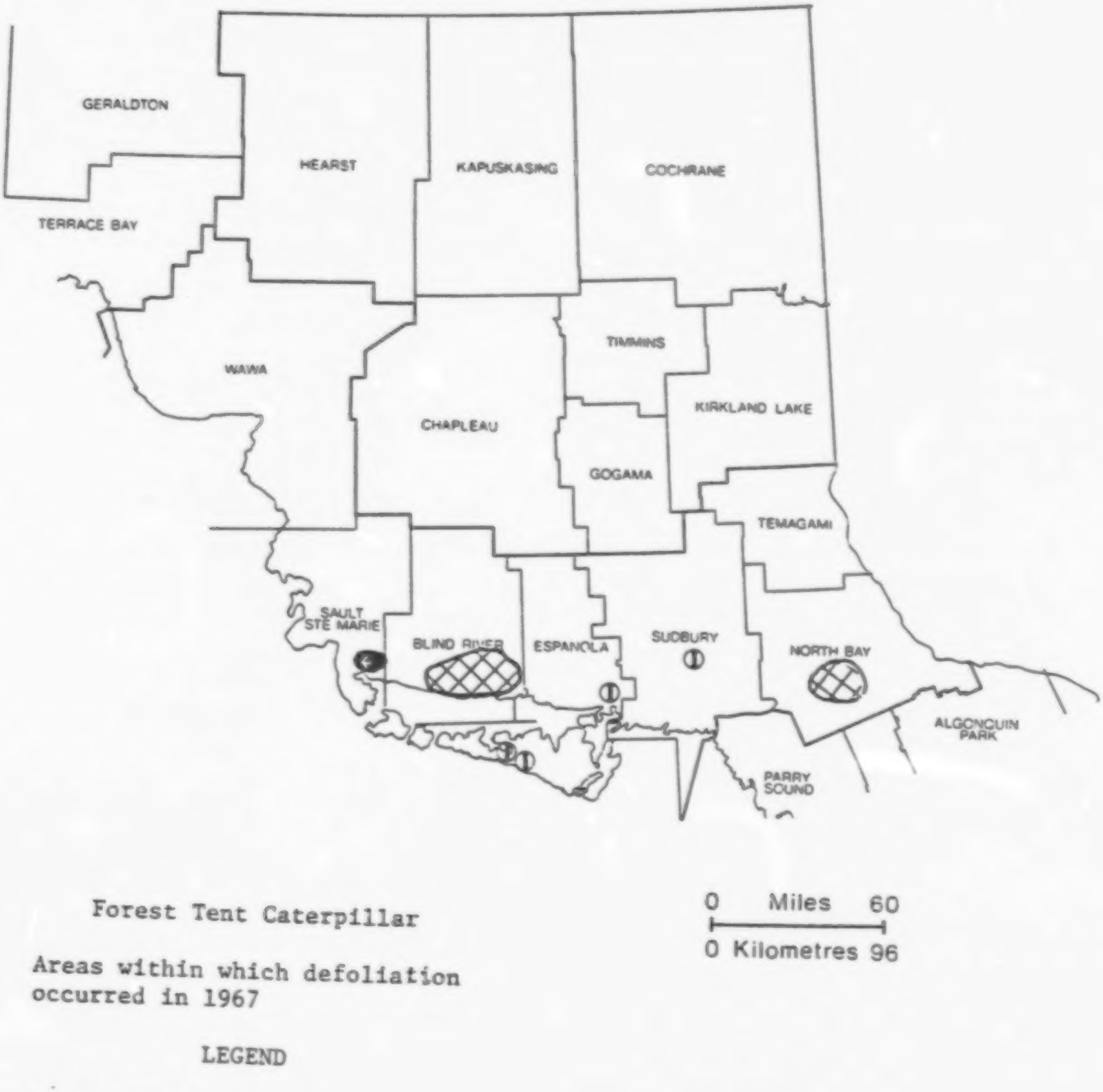
Areas within which defoliation occurred in 1966

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ● or ▦

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

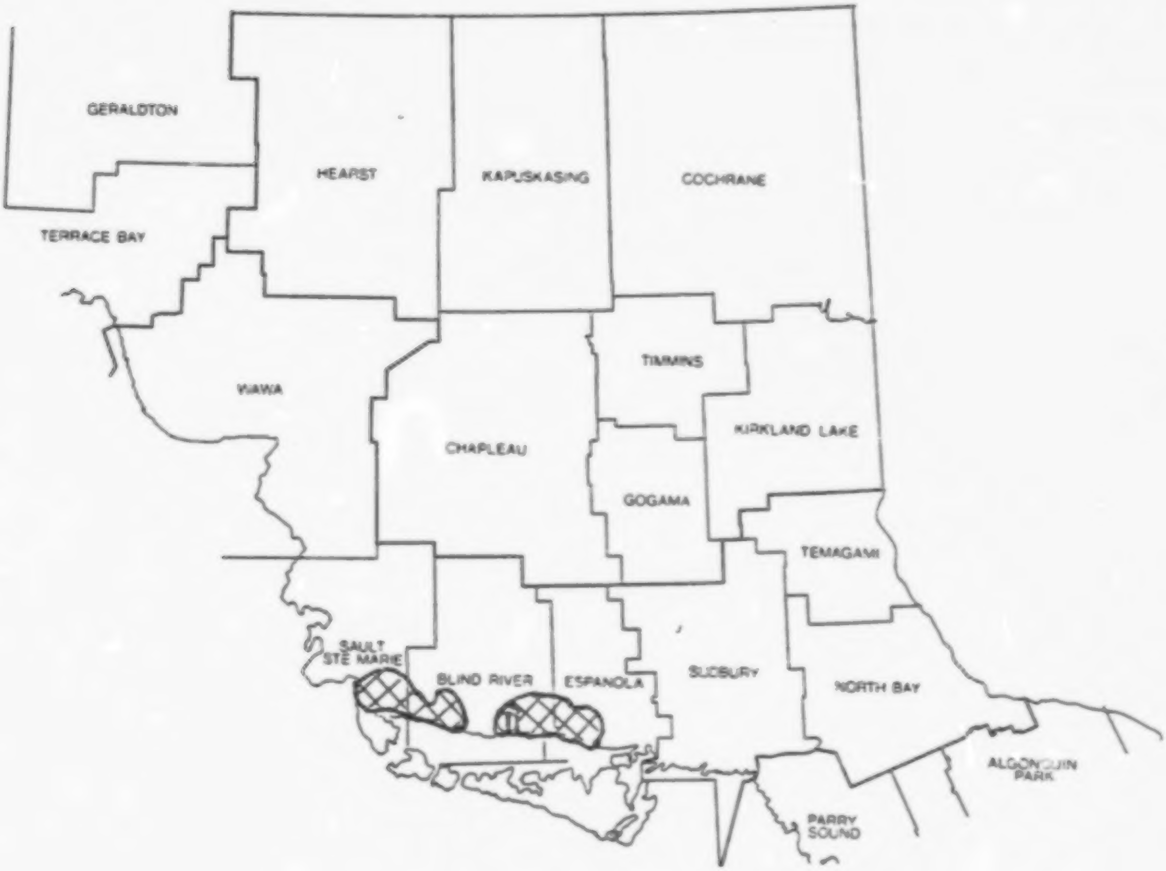
Areas within which defoliation
occurred in 1967

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

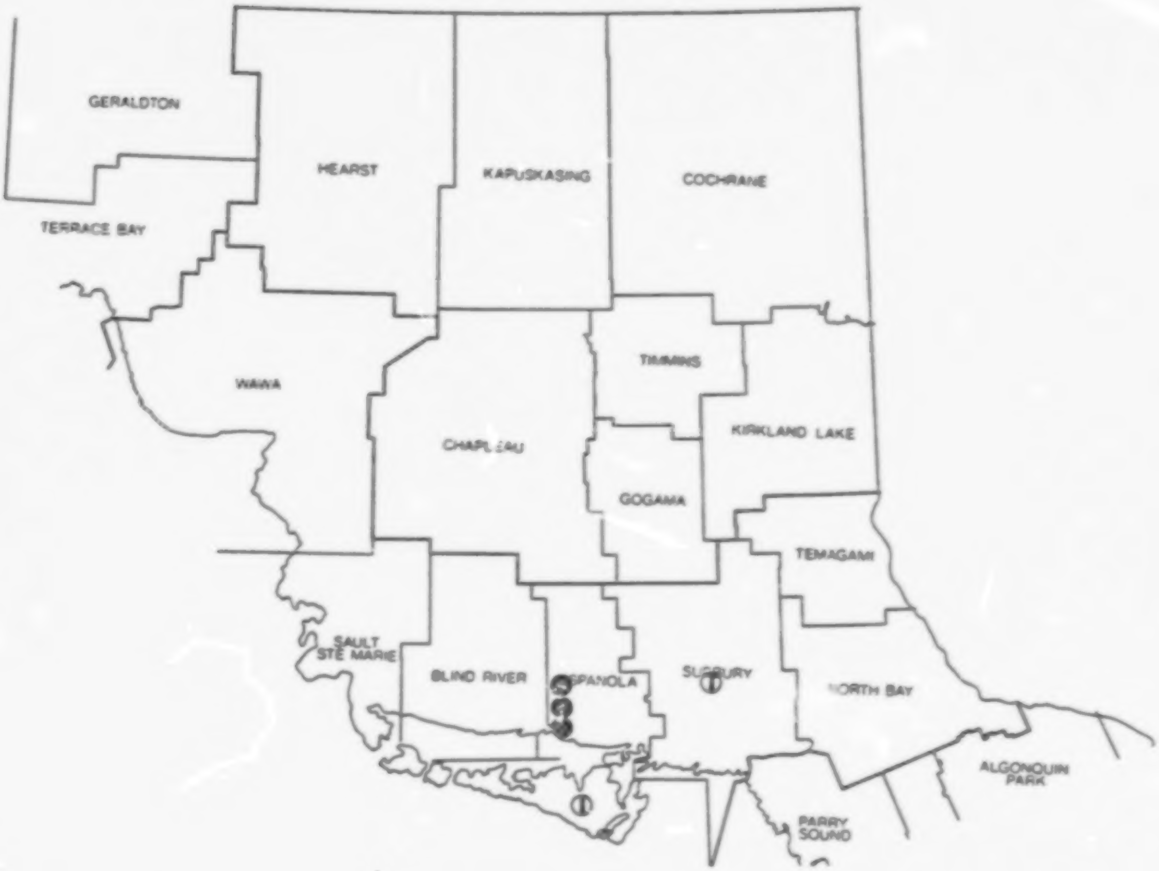
Areas within which defoliation occurred in 1968

LEGEND

Light defoliation ⦶

Moderate-to-severe defoliation ▩

NORTHEASTERN ONTARIO



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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1969

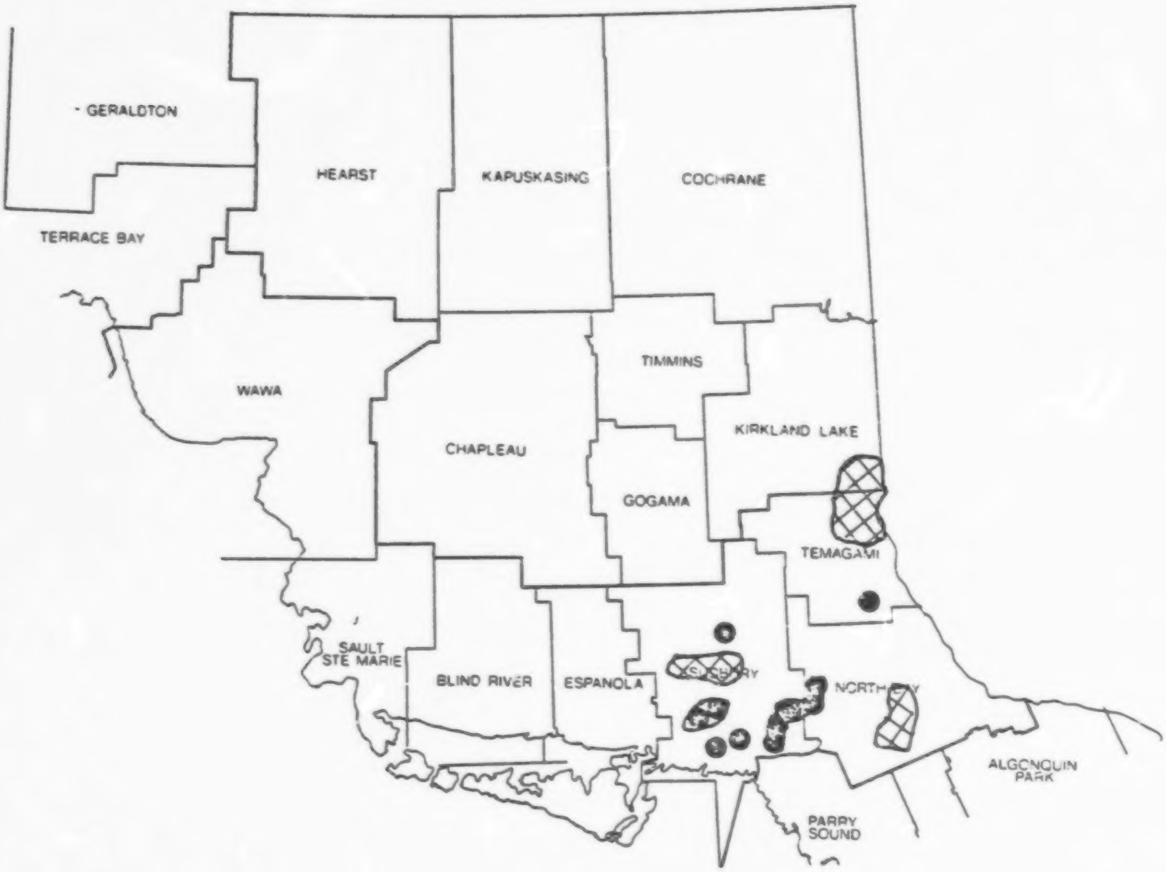
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

0 Miles 60

0 Kilometres 96

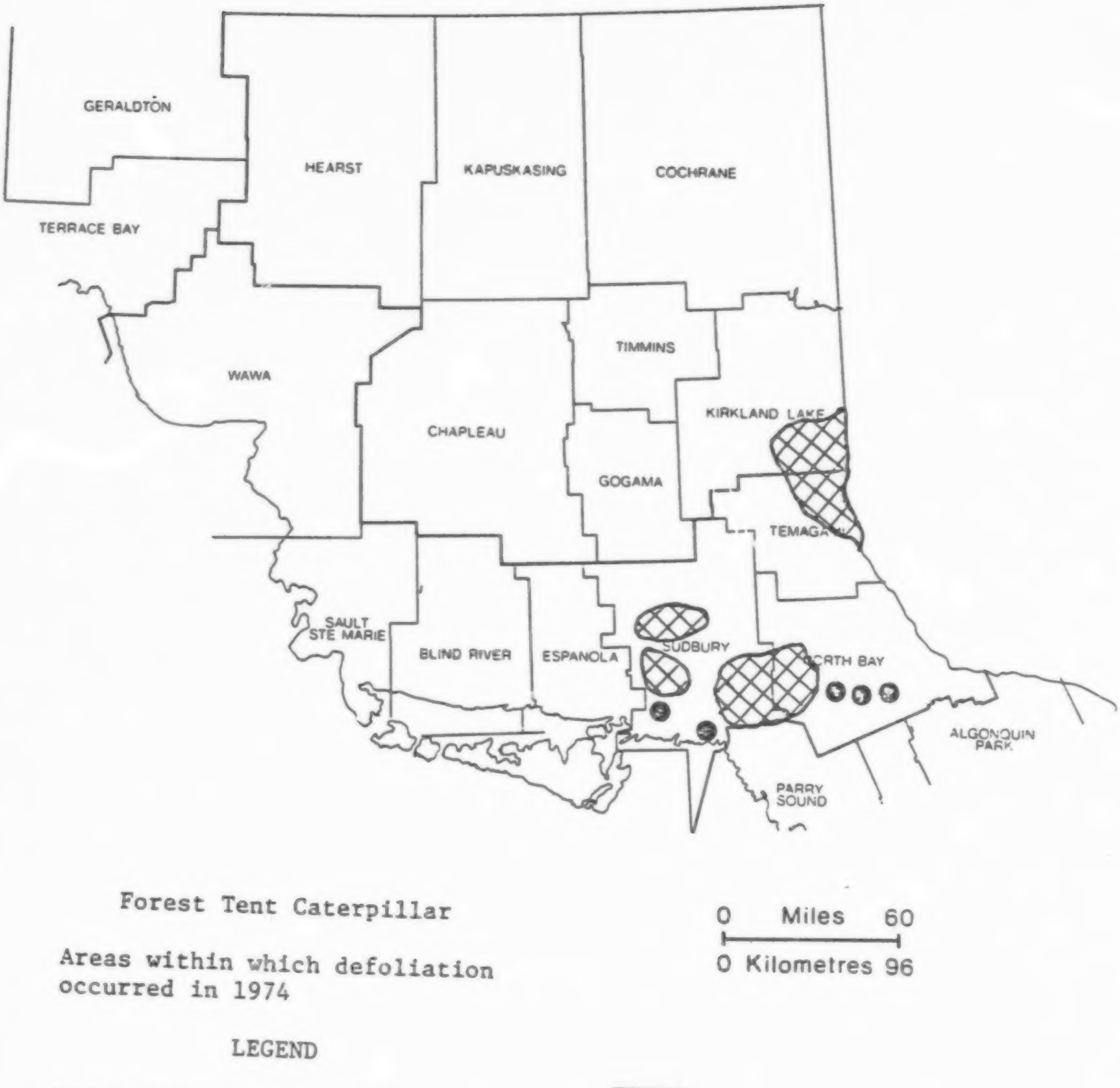
Forest Tent Caterpillar

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

Areas within which defoliation occurred in 1974

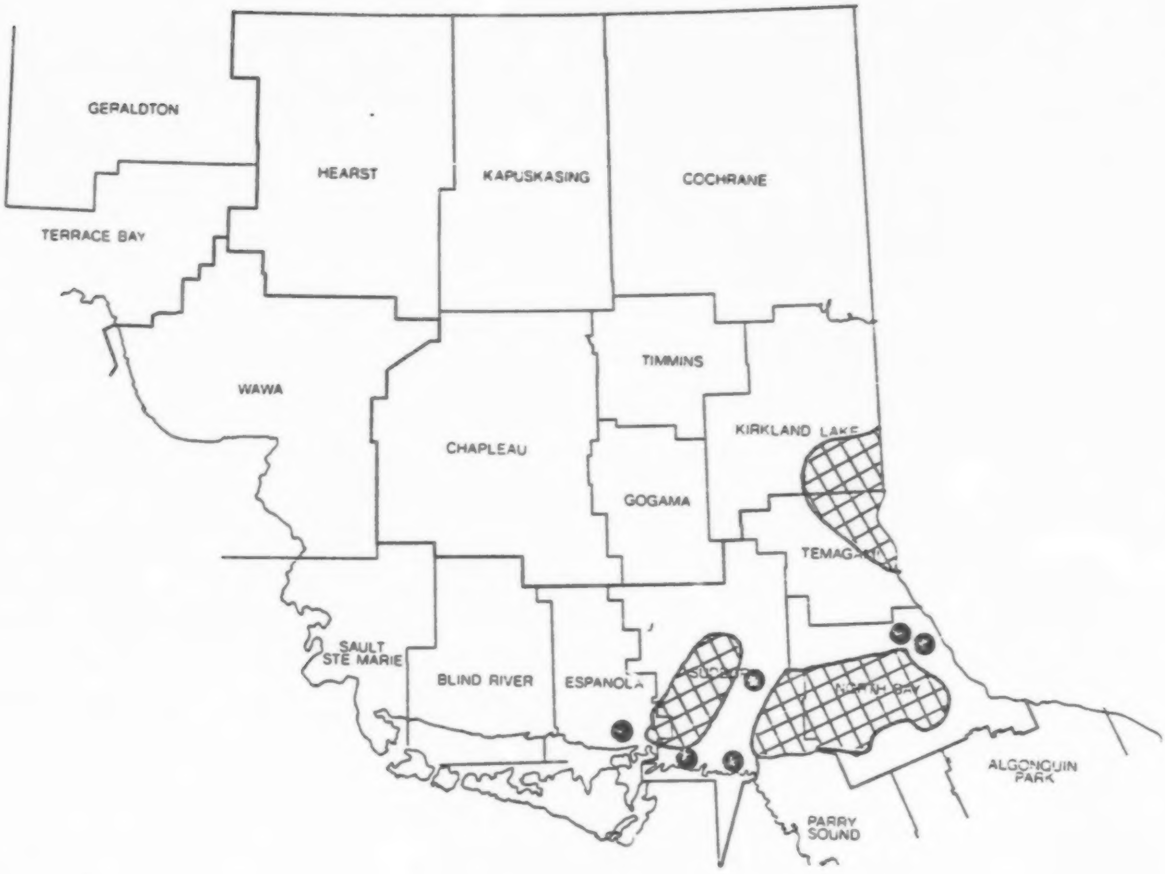
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

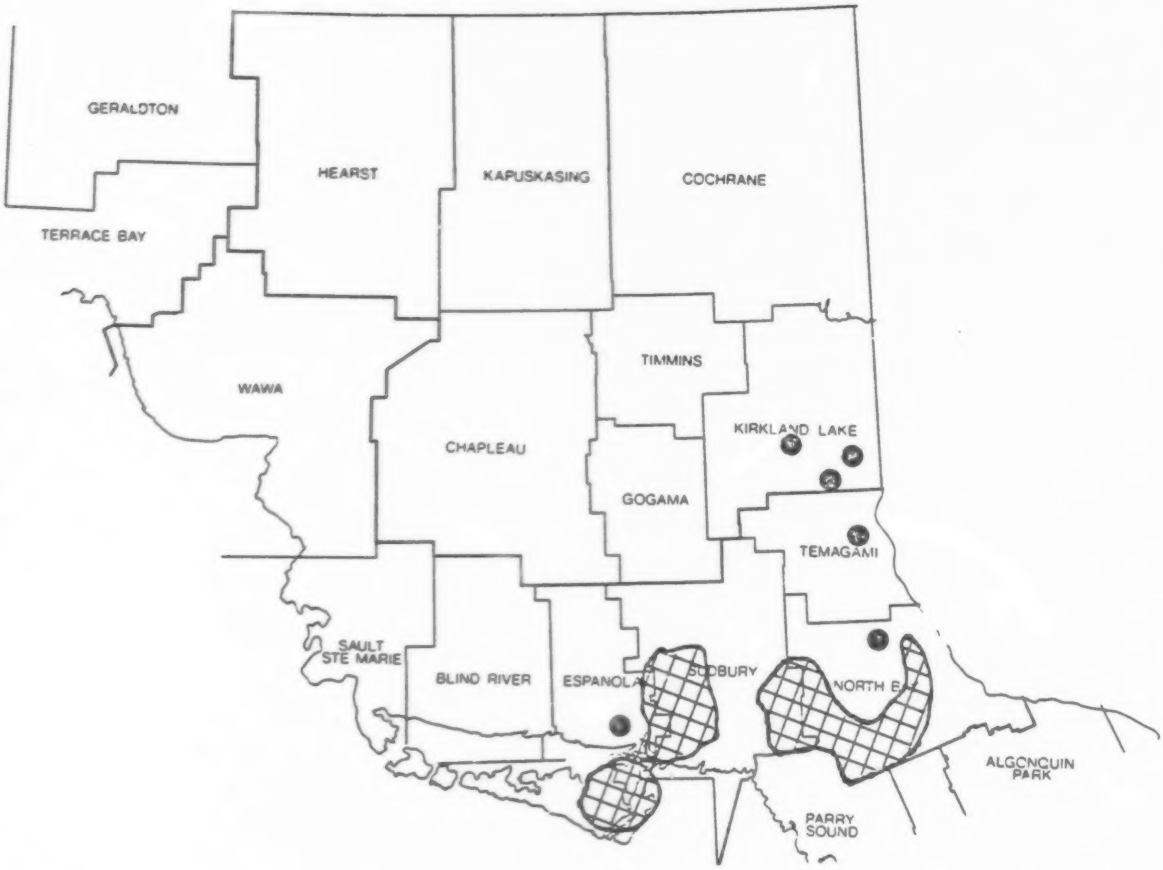
Forest Tent Caterpillar

Areas within which defoliation
occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

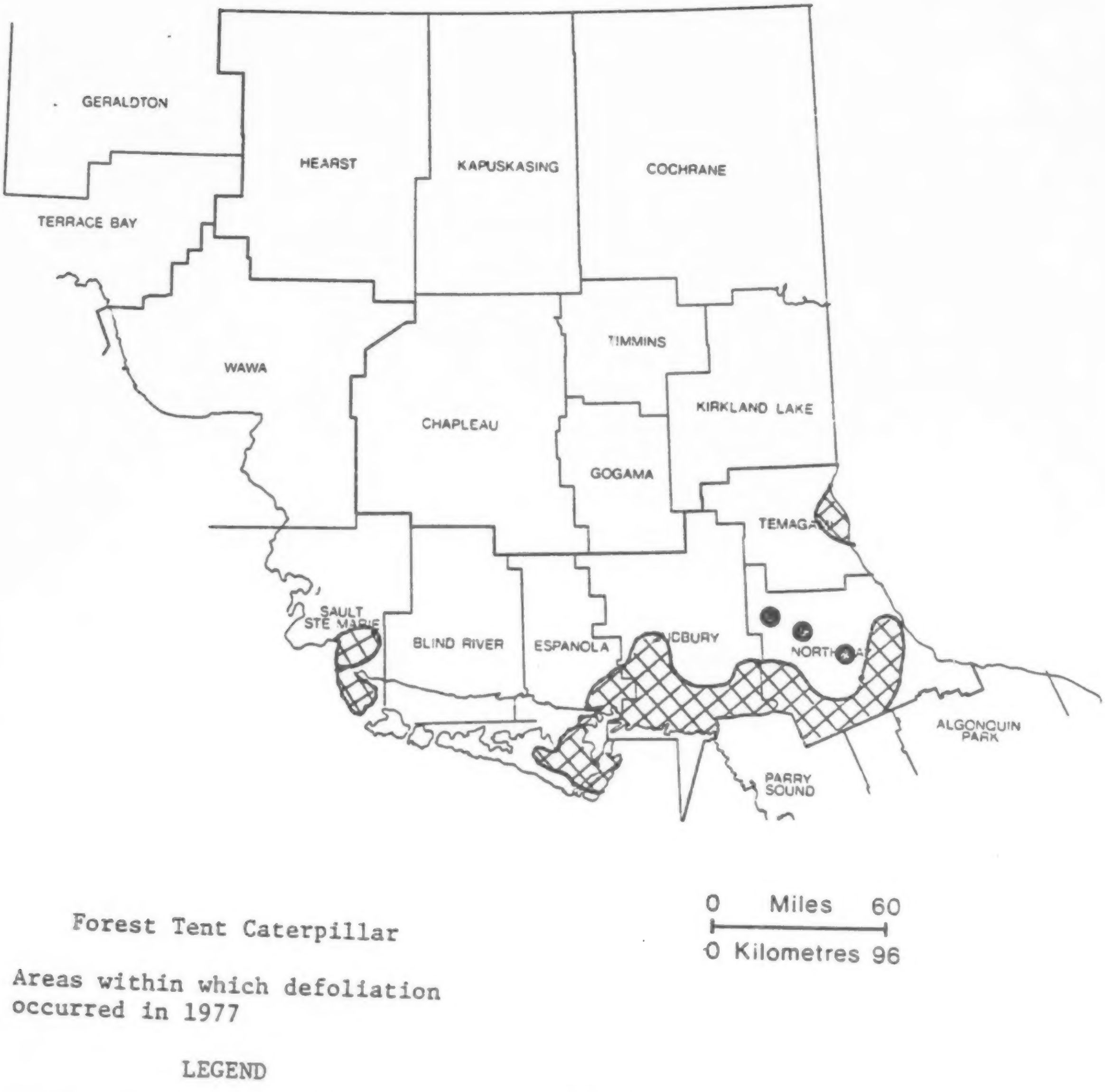
Forest Tent Caterpillar

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

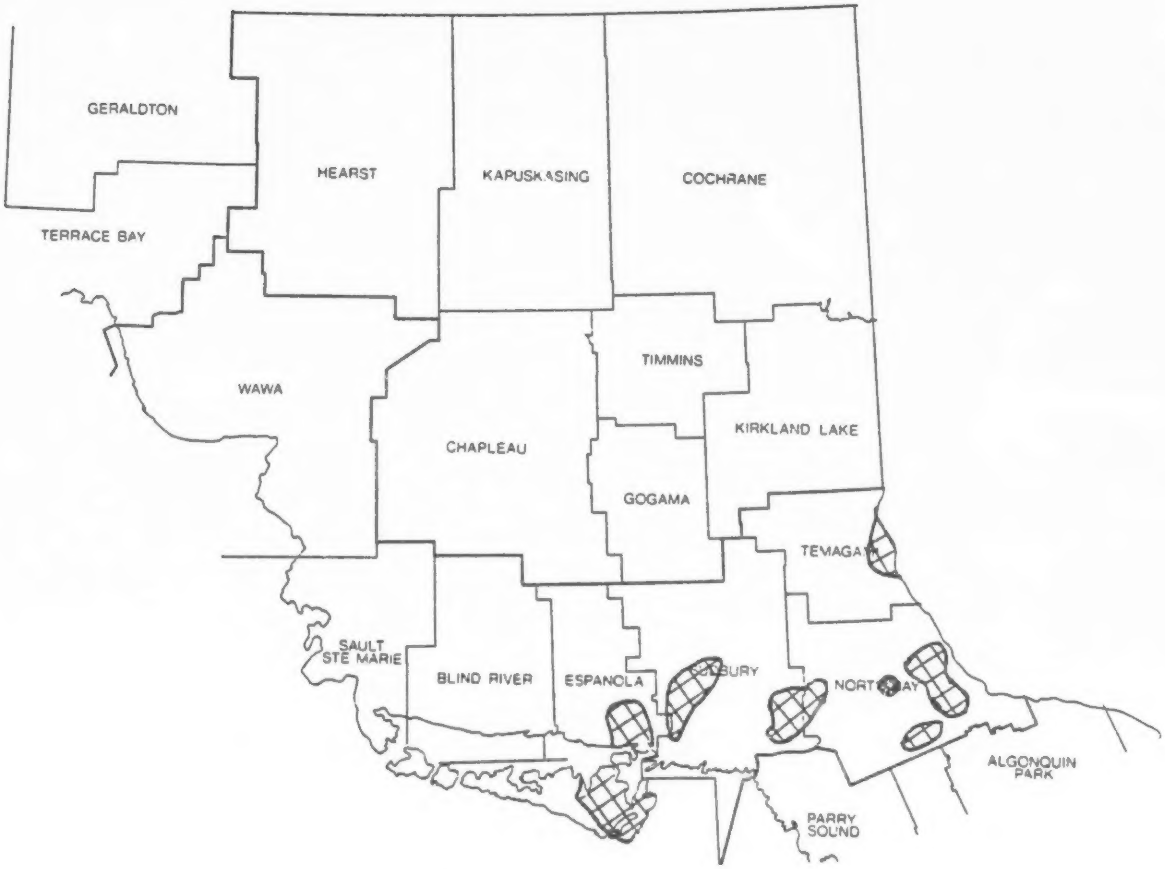
Forest Tent Caterpillar

Areas within which defoliation
occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

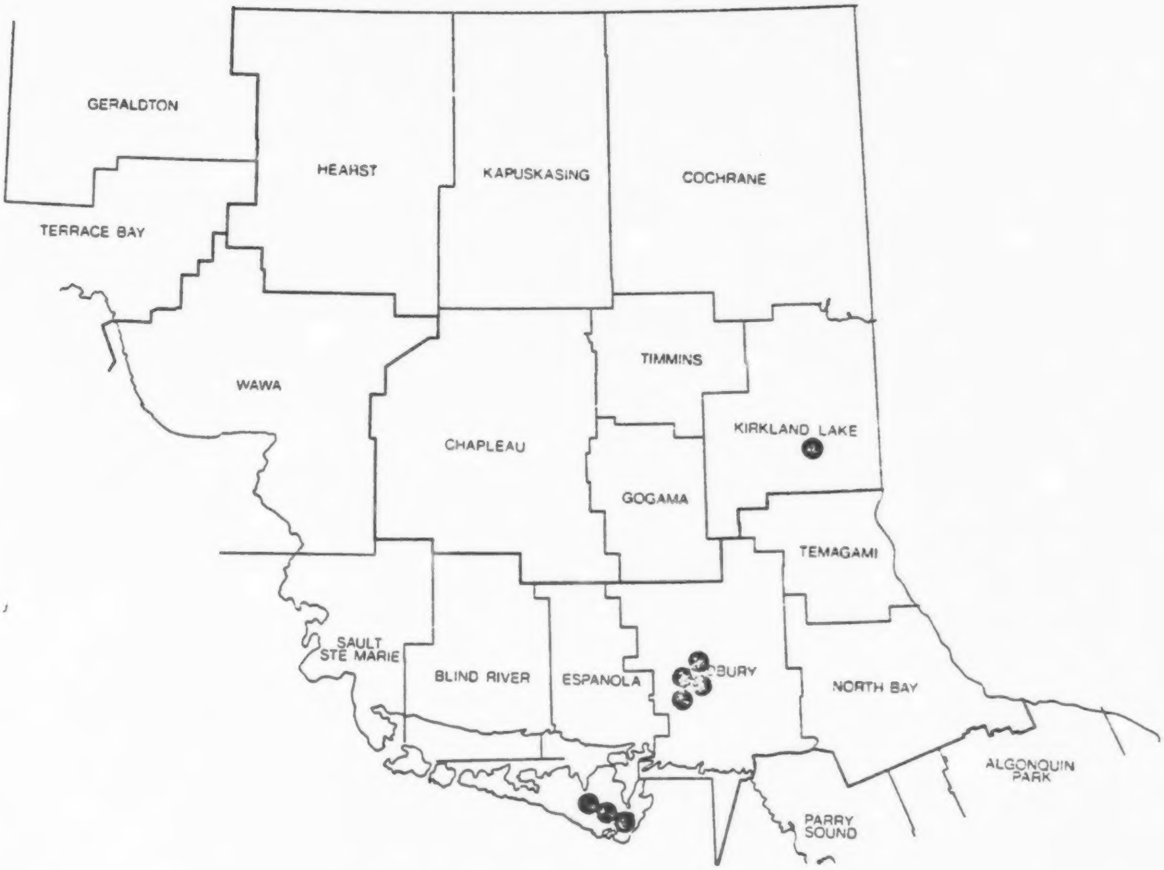
Forest Tent Caterpillar

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND

Forest Tent Caterpillar

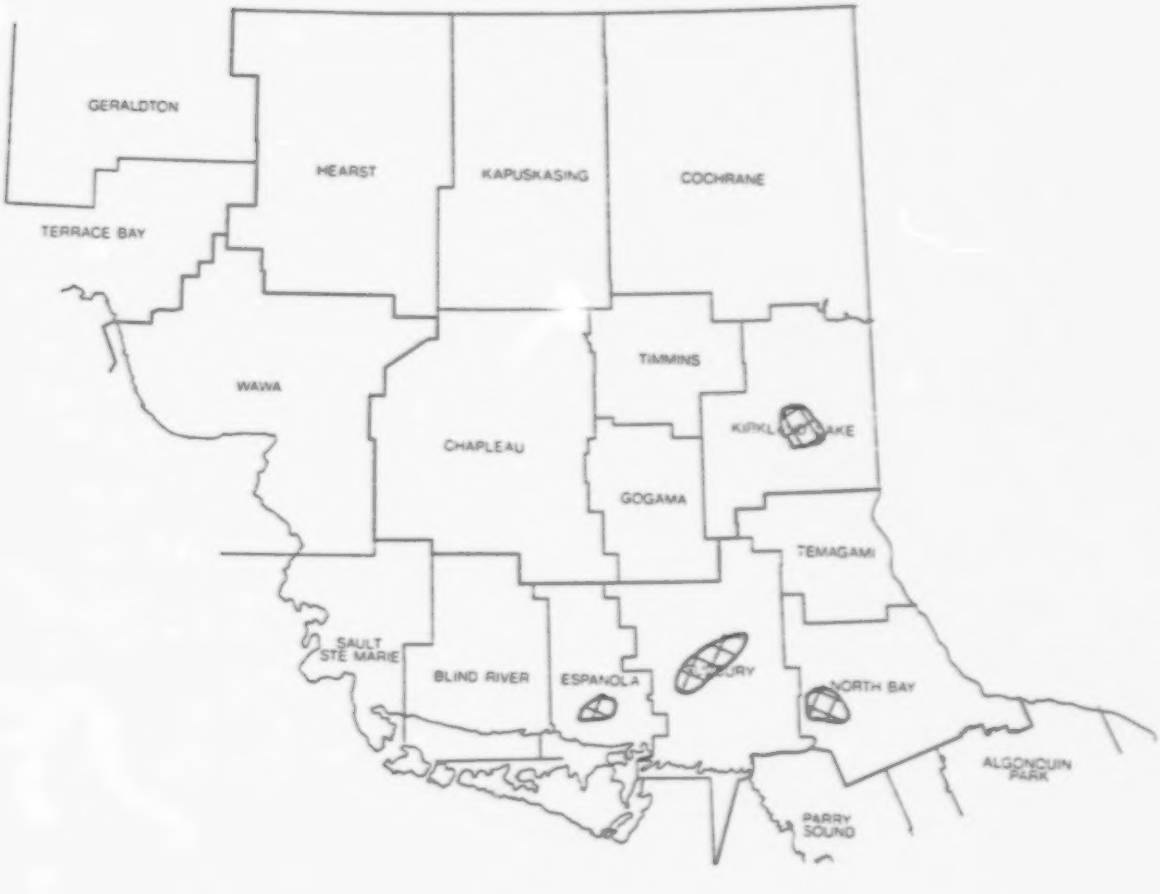
Areas within which defoliation occurred in 1979

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO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TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

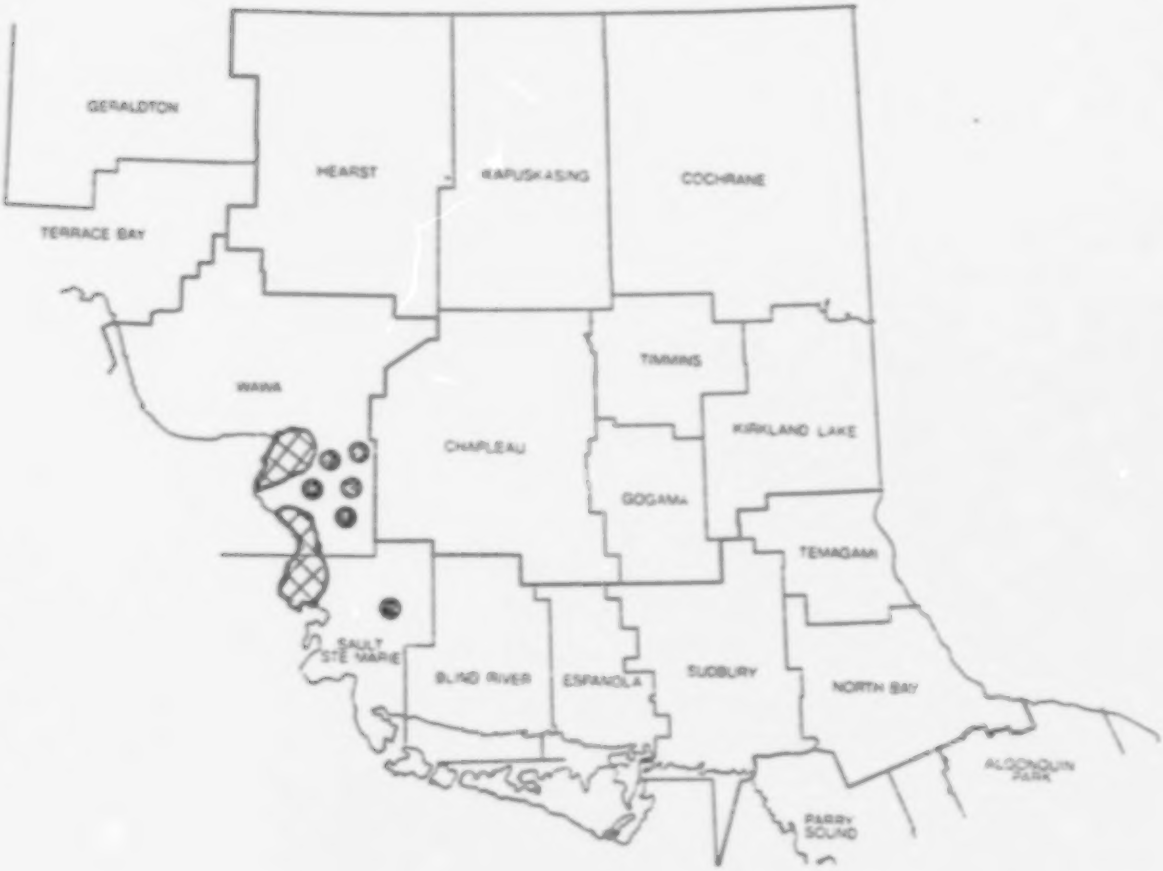
Forest Tent Caterpillar

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO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TEMAGAMI
SAULT STE MARIE
BLIND RIVER
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

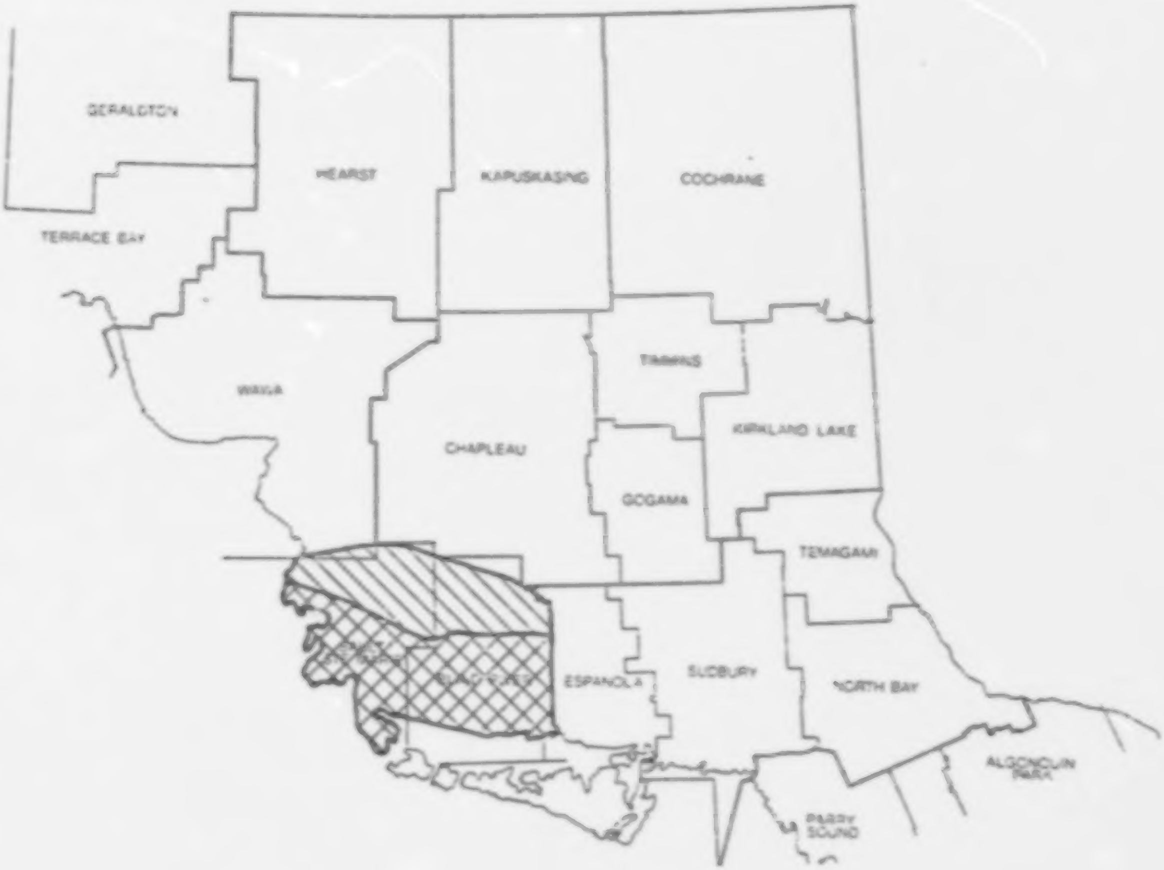
Ambermarked Birch Leafminer

Areas with which defoliation
occurred in 1958

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO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TEMAGAMI
ESPANOLA
SUDBURY
NORTH BAY
ALGONQUIN PARK
PARRY SOUND
0 Miles 60
0 Kilometres 96

Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ▨

Moderate-to-severe defoliation ☒